DUAL PRACTICE IN KAMPALA, UGANDA: A MIXED METHODS STUDY OF MANAGEMENT AND POLICY

By

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ABSTRACT

Problem Statement: Dual practice is widespread in developing countries and frequently sparks discussions about its effects on service delivery and system performance. In the absence of empirical studies, policy-makers often rely on anecdotal evidence for policy discussions and planning. This thesis examines dual practice in Kampala, Uganda, where, anecdotally, almost all government health workers have dual practice.

Methods: An exploratory mixed methods design included multiple case studies of government facilities with embedded units of analysis, as well as a self-administered survey containing preference elicitation and demographic questions completed by government doctors and nurses. *Manuscript 1* uses interview and survey data to develop a framework for understanding dual practice. *Manuscript 2* uses qualitative data and develops a causal loop diagram to describe the interactions, adaptations, and management practices related to dual practice. *Manuscripts 3 and 4* use best-worst scaling to identify and elicit provider preferences on the consequences of dual practice and on dual potential practice policy options, respectively.

Results: *Manuscript 1* describes the heterogeneous nature of dual practice in Uganda. *Manuscript 2* illustrates the historical development of dual practice in Uganda and explains informal management practices within government facilities. *Manuscript3* produces a ranking of providers' perceptions of dual practice consequences. *Manuscript 4* identifies policy options linked to salary, dual practice policy, work structure, and benefits. Policy options related to salary and work structure were most important to health providers. Dual practice policy options were least important.

Conclusions: This study underscores the importance of defining dual practice locally and accounting for differences between doctors and nurses and among doctors. A formal policy on dual practice should carefully consider unintended feedback in the system, the role of public and private incentives for government providers, and the costs and benefits of various policy options. Provider stated preferences point to potential policies to improve health workforce management in the short term – such as supportive supervision, while resources are secured for longer-term policies – salary increases, civil service reform. Future research should consider evaluating the effects of dual practice on service delivery and the effectiveness of policy initiatives.

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ABBREVIATIONS

BWS	Best worst scaling
CLD	Causal loop diagram
DCE	Discrete choice experiment
HCIII	Health Center III
HCIV	Health Center IV
HRH	Human Resources for Health
LMIC	Low and middle income countries
MOH	Ministry of Health
PFP	Private for-profit
PNFP	Private not-for-profit
SWAp	Sector-wide approach
VHT	Village health team
WHO	World Health Organization

CHAPTER 1: INTRODUCTION

INTRODUCTION AND RATIONALE

The health workforce is often a health systems' most expensive and valuable input. Although the World Health Organization (WHO) proposes that "the workforce goal is simple – to get the right workers with the right skills in the right place doing the right things"(World Health Organization 2006), achieving this goal is one of the most complex challenges facing health systems across the globe. In low and middle-income countries (LMICs), the challenges related to health workforce distribution and performance are aggravated by low levels of health financing, severe shortages of skilled health care professionals, and poor governance. The public sector is also challenged by weak infrastructure, high workloads, and difficulties to motivate and retain their providers. Furthermore, in LMIC health systems, which are mixed systems where the lines between the public and private sectors are blurred, health professions career pathways are becoming more diverse and dynamic (Bloom and Standing 2001; World Health Organization 2006; Ensor, Serneels et al. 2013). The private not-for-profit sector, comprised of faith-based and non-profit organizations and often an extension of the public sector, as well as the private for-profit sectors can provide attractive benefits to providers. Some health providers exit the government health workforce to migrate permanently to the private sector. However, an increasing number of government providers do not fully migrate to the private sector. Instead, they often hold jobs in the private sector in addition to their full time government work – a phenomenon called dual practice.

Studies show that dual practice is widespread: over one third of physicians in Vietnam and Cote d'Ivoire, 40% in Sri Lanka and Zimbabwe, and as high as 80% in Indonesia and Bangladesh held second jobs (Chomitz, Setiadi et al. 1998; Gruen, Anwar et al. 2002; Berman and Cuizon 2004; Gupta and Dal Poz 2009; Vujicic, Shengelia et al. 2011). In Uganda, it is perceived that almost all government health providers hold additional jobs.

Furthermore, existing studies propose that dual practice can have both positive and negative consequences on service delivery. For example, while it could help to supplement health providers' incomes where the government is unable to do so, dual practice could also contribute to absenteeism and increased waiting times in the public sector. More often, it is the negative consequences that draw public and policy-maker attention. In Uganda, media stories linked to dual practice most often highlight patient neglect in the public sector and of inefficiencies due to ghost workers and absenteeism. It is these types of concerns that are raising the profile of dual practice on policy-maker agendas – in Uganda and in other LMIC (Asiimwe 2008; Ranson, Chopra et al. 2010).

However, although it is a phenomenon that many countries experience and that policy-makers and researchers are increasingly concerned about, little recent or empirical evidence on the prevalence of dual practice and its effects on the health system exists. Consequently, similar to Uganda, policy-makers often rely on anecdotal evidence on dual practice for health workforce policy discussions and planning, or, at times, exclude dual practice from such discussions altogether.

Insufficient attention to a widespread, emerging phenomenon, such as dual practice, could cause stakeholders to have an incomplete understanding of health worker behaviors, motivation, and performance. Not including such a common provider practice in policy discussions on health workforce education, performance, and management, leads to missed opportunities for addressing negative consequences of dual practice in order to improve public sector service delivery and ignores the potential synergies between the public and private sectors. Understanding dual practice patterns in a particular context is an important first step for evaluating the effects of dual practice on a health system and developing appropriate policy responses.

This thesis presents an approach for examining dual practice – how and why it occurs, its perceived effects on the health system, related local management practices, and provider preferences for potential policy responses. It explores these issues in the context of Kampala, Uganda. The remainder of this chapter presents a review of the literature on dual practice and background on health workforce issues in Uganda, in order to set the stage for the research questions addressed in this dissertation.

LITERATURE REVIEW

The literature on dual practice LMICs has modestly grown in the last decade, likely due to increasing policy-maker and researcher interest in the effects of dual practice on the health system (Ranson, Chopra et al. 2010), as well as in the effects of rapid private sector growth in mixed health systems (Lagomarsino, Nachuk et al. 2009; Kiwanuka, Rutebemberwa et al. 2011). This section summarizes the latest literature on the subject of dual practice in LMICs, specifically on: how it has been defined; its prevalence; dual practice provider characteristics; their motivation; the types of activities provider engage in, and how providers divide their time between the public and private sectors; policy and regulatory responses; and the effects of dual practice on the health system. The final section is dedicated to summarizing what is currently known about dual practice in Uganda.

DEFINITION OF DUAL PRACTICE

Dual practice in the health sector occurs when government health provider, usually employed full-time, also works in the private sector. This phenomenon can manifest itself through a variety of combinations between part-time and full-time employment, and between the public and private sectors, between health and non-health activities, and is usually classified by the amount of time the individual spends in each (Ferrinho, Van Lerberghe et al. 2004; García-Prado and González 2006). Health sector dual practice activities can include provision of health services in private facilities, formal or informal pharmaceutical sales, and informal payments (Bennett, McPake et al. 1997; García-Prado and González 2006). Dual practice has also been referred to as moonlighting, *locum tenens*, dual employment, and multiple job holding (Jacinto 2001; Berman and Cuizon 2004; García-Prado and González 2006; Muula 2006; Snow, Asabir et al. 2011). In the recent literature, "dual practice" is the most frequently used label for this phenomenon, although it is possible that some health workers, hold more than two jobs (Garcia-Prado and Gonzalez 2011; Kiwanuka, Rutebemberwa et al. 2011; Socha and Bech 2011).

PREVALENCE OF DUAL PRACTICE

Dual practice is highly prevalent phenomenon in both high and low- and middle-income countries. However, dual practice is poorly documented in both types of settings and data on prevalence and other characteristics are limited. A recent study in Australia found that almost half of all the specialists included in a national cohort of physicians worked in both the public and private sectors (Cheng, Joyce et al. 2013). A recent cross-country study found that in Chad and Jamaica half of physicians had a second job at the time of the interview (Gupta and Dal Poz 2009). In Sri Lanka and Zimbabwe, the figure was around 40%, in Cote d'Ivoire around 30%, and in Mozambique the figure was closer around 20% (Gupta and Dal Poz 2009). Estimates of the prevalence of dual practice are as high 80% among physicians in Indonesia (Bir and Eggleston 2003), and even higher (93%) among the hospital administrative personnel (Berman and Cuizon 2004). Indonesia is one of the few countries that is known to legally permit dual practice, however high prevalence has been recognized in other settings as well (Gruen, Anwar et al. 2002; Mandelli, Kyomuhangi et al. 2005). In Vietnam, more than one third of physicians are thought to have multiple jobs (Vujicic, Shengelia et al. 2011). In Thailand, 70% of physicians fully employed in the public sector also had dual practice (Prakongsai 2005).

GOVERNMENT HEALTH PROVIDERS' DUAL PRACTICE PROFILE AND MOTIVATION

With a couple of exceptions (Bennett, McPake et al. 1997; Baraldi and Car 2008; Gupta and Dal Poz 2009), the available literature presents dual practice exclusively for physicians. One of early studies by Ferrinho and colleagues (Ferrinho, Lerberghe et al. 1998) pointed to increasing role of nurses and medical technicians in providing health services, especially at the lower levels of the health system where there are no doctors, but where the private sector is growing nonetheless. The Indonesian Medical Association data cited by Berman and Cuizon confirm this for a several health specialties and other health personnel (Berman and Cuizon 2004). The six country study conducted by Gupta and Dal Poz found that the rate of dual practice varied

considerably from country to country for nurses and midwives. The authors propose that this happens in response to national regulations, like in Sri Lanka, which only allow physicians to have a second job (Gupta and Dal Poz 2009).

Health providers engage in dual practice for both financial and non-financial reasons. In LMICs, government health providers are generally compensated poorly compared to professionals in other sectors, largely due to the limited resources allocated to the health sector. Financial reasons play a significant role across settings, earning capacity in the private sector is significantly higher than in the public sector, and there is little to no regulation of private sector fee schedules. For example, in South Africa, specialists earn up to six times as much in their private jobs as compared to their public sector salary, despite the fact that they would dedicate significantly less time to their private sector jobs (Ashmore 2013).

Although public providers take on additional jobs in the private sector to earn more money, non-financial aspects in both the public and the private sector also play a role. Non-financial benefits to private sector include: professional satisfaction, public responsibility, and prestige (Gruen, Anwar et al. 2002; Ferrinho, Lerberghe et al. 2004; Hipgrave and Hort 2013). Additionally, the private sector job offers health providers with continuing education opportunities, which facilitate career advancement. Work environment characteristics, such as management, supervision, and organizational culture, also motivate dual practice (Van Lerberghe, Conceicao et al. 2002; Berman and Cuizon 2004; Ferrinho, Van Lerberghe et al. 2004; García-Prado and González 2006; Hipgrave and Hort 2013).

Given the significant earning capacity in the private sector, one might expect health workers to leave their government jobs altogether. However, there are reasons why providers decide to keep their public sector jobs, in spite of poor infrastructure, high workloads, and distrust between supervisors and policy-makers in the public sector (Ashmore 2013). For example, a public sector job, although it may be poorly remunerated, contributes to a provider's prestige and

professional status and offers some opportunities for continuing education. A recent study of South African specialists who are engaged in dual practice found that these individuals maintained their public sector appointments because the public hospital provided a better team environment, more opportunities to conduct research and participated in academia, and "greater opportunities to feel 'needed' and 'relevant'" (Ashmore 2013). Finally, the public sector job offers the job security, retirement benefits, as well as the opportunity to be involved in research – all incentives that are not typically available in informal private sector arrangements.

The degree to which financial and non-financial reasons are important and relevant has not been documented systematically, across contexts. For example, while doctors across context engage in dual practice for financial reasons, this might be a more critical factor in a Sub-Saharan Africa country than it would be in Australia. Also, some of these factors would be more relevant in low-income settings than in high-income settings. For example, management and supervision might not differ as between public and private sector facilities in a high-income setting such as the United Kingdom. However, the situation might be much more different in Bangladesh, where a highly dynamic but unregulated private sector would produce different working environments than the public sector.

GOVERNMENT HEALTH PROVIDERS' DUAL PRACTICE ACTIVITIES

The activities that providers can pursue as part of dual practice vary and can include both health and non-health related ones. Health related ones include service provision in a private setting and patient care. Non-health activities can include farming, trade, or small business ownership. Some authors have proposed that dual practice can also be found in the form of overtime, even in the same facility as the main job (Ferrinho, Van Lerberghe et al. 2004), as well as in the form of informal or "under the table" payments (Bennett, McPake et al. 1997).

The combination of activities that providers engage in for dual practice and where they occur has not often been documented. Such a characterization is relevant because some activities

have more potential for creating conflict of interest for providers than others, and therefore related health system effects would also vary.

HOW MUCH TIME DO GOVERNMENT PROVIDERS SPEND IN DUAL PRACTICE AND WHAT ARE THE ASSOCIATED EARNINGS?

Not very many studies exist describe how providers share their time between their public and private sector activities. The available country-level data are summarized in Table 1. In terms of income, private sector earnings through dual practice can be as high as 90% of official salaries for physicians in Vietnam (Vujicic, Shengelia et al. 2011). In Thailand, physicians who had dual practice could double the income they would earn from public salaries alone (Prakongsai 2005). In the UK, some specialists could even triple their incomes through dual practice (Humphrey and Russell 2004). In China, doctors earn one third of their income from dual practice (Bian, Sun et al. 2003).

Except for the number of hours that physicians declared spending on dual practice and general consensus that the private sector holds significant earning opportunities, clear patterns do not exist. Moreover, available studies show that there is little consistency in how such important dimensions of dual practice are captured over time. No data were available to show the dual practice level of effort or income for more than one point in time, and therefore little is known about whether and how these characteristics change over time. Furthermore, as was the case for other characteristics of dual practice, almost no data are available on nurses. Finally, some of the data come from studies that are more than 10 years old, in contexts where much has changed since.

EFFECTS OF DUAL PRACTICE ON THE HEALTH SYSTEM

Dual practice impacts on service delivery have been explored through theoretical and econometric models, which have identified a number of potential outcomes (Berman and Cuizon 2004; Eggleston and Bir 2006; Biglaiser and Ma 2007; Kiwanuka, Rutebemberwa et al. 2011).

Table 2 provides a summary of the potential effects of dual practice on service delivery, based on the available literature and particularly the two reviews by Garcia-Prado and colleagues (Garcia-Prado and Gonzalez 2011) and Berman and colleagues (Berman and Cuizon 2004). These effects range from positive – such as the retention of health professionals who might otherwise emigrate – to negative ones – such as public sector quality reduction and the diversion of patients, particularly healthier ones, to the private sector (Berman and Cuizon 2004; García-Prado and González 2006; Garcia-Prado and Gonzalez 2011).

While these studies have been typically undertaken without a specific context in mind, consensus exists in the literature that the extent to which dual practice affects a system positively or negatively depends on the context (Berman and Cuizon 2004; Ferrinho, Lerberghe et al. 2004; García-Prado and González 2006; Kiwanuka, Rutebemberwa et al. 2011; Kiwanuka, Rutebemberwa et al. 2011; Socha and Bech 2011; Hipgrave and Hort 2013). For example, patient diversion is a negative consequence in situations where it leads to poor patients being diverted to expensive private sector services that are of equal or lesser quality than the less expensive public sector equivalent. Patient diversion is not necessarily a negative consequence in a system where those who can afford and are willing to pay are diverted to the private sector, therefore allowing better targeting of the poor in public facilities. Furthermore, in developing countries, these effects are confounded by other factors, which may or may not be related to dual practice. For example, absenteeism and informal payments can and do occur irrespective of dual practice. The extent to which dual practice contributes to these is unknown.

No studies in Sub-Saharan Africa have specifically evaluated the effects of dual practice on the health system. However, a few have explored dual practice qualitatively, as part of broader studies of health workforce issues and the private sector. For example, in a study of how doctors earn their livelihood in Malawi, Muula and colleagues identified that dual practice is an important survival strategy (Muula 2006). The neglect of public sector duties in favor of private

sector duties, and perceived pilfering of drugs and medical supply were the main effects on service delivery perceived by respondents (Muula 2006). Ferrinho and colleagues, as part of an older study on dual practice in Portuguese-speaking African countries (Angola, Guinea-Bissau, Mozambique, and Sao Tomé and Principe), found that respondents expected that their private sector activities would impact their public sector work (Ferrinho, Lerberghe et al. 1998). For example, almost all respondents perceived the potential for "decreasing quality of health care provision in the public sector and lack of attention as a consequence of tiredness," many anticipated issues related to "conflicting timetables, diminishing the actual time spent on the public sector job and resulting in decreased personal availability, increased waiting time for patients, and transference of resources from the public to the private sector" (Ferrinho, Lerberghe et al. 1998).

POLICY RESPONSES TO DUAL PRACTICE

The policy options for regulating dual practice fall into four categories (see Table 3): (1) not allowing dual practice, (2) allowing dual practice using “limiting” or restrictive policies, (3) allowing dual practice using “rewarding” policies, or (4) not formally recognizing the existence of dual practice (García-Prado and González 2007; Kiwanuka, Rutebemberwa et al. 2011; Hipgrave and Hort 2013). Policy options at either extreme – such as an official ban, or no formal policy at all are usually presumed to address dual practice among all health workers. More specific policies, such as those restricting private sector activities or incentivizing exclusive public service have been typically aimed at physicians.

Only a few countries formally banned dual practice (e.g. China, Canada, some states in India) (Jan, Bian et al. 2005; Garcia-Prado and Gonzalez 2011). While the effectiveness of banning dual practice has not been evaluated, a ban is generally perceived as ineffective in LMIC settings (Garcia-Prado and Gonzalez 2011; Kiwanuka, Rutebemberwa et al. 2011). Allowing dual practice with either “limiting” or “rewarding” policies intends to mitigate the perceived

consequences on service delivery (Garcia-Prado and Gonzalez 2011). Rewarding policies offer favorable contracts for those agreeing to work exclusively in the public sector (typically a mixture between higher public sector pay and non-financial incentives, as well as the right to see private patients in public facilities). Limiting policies are designed to limit private sector activities – by putting restrictions on private sector income or the number of hours that government workers can spend delivering care in the private sector, or by self-regulation through professional and civil society organizations (Garcia-Prado and Gonzalez 2011). For example, in the UK, full-time government consultants can earn up to 10% in addition of their salaries, while those on "maximum part-time contracts" have no restriction (Humphrey and Russell 2004). Allowing dual practice without restrictions currently occurs in contexts where the public sector lacks the capacity to hire all physicians (e.g. Indonesia, Egypt), but such an approach is unlikely in countries facing severe health workforce shortages (Kiwanuka, Rutebemberwa et al. 2011).

Currently, no empirical studies exist evaluating these different policy options their effectiveness at mitigating unwanted consequences of dual practice and their unintended consequences. According to available reviews, restrictions on dual practice are most likely to be effective in contexts where regulation by the government and professional associations is both independent and effective – typically difficult to achieve, particularly in low and middle income settings (García-Prado and González 2007; Hipgrave and Hort 2013). Rewarding policies are most feasible when government resources are available and can be allocated efficiently. From the available literature, the vast majority of policies have been targeting physicians only.

STUDY SETTING - UGANDA

Uganda is a low-income country in Sub-Saharan Africa (see Figure 1), whose public service was seen as one of the most effective in the region in the 1960s, after the country's independence from Britain (Ssengooba, Rahman et al. 2007). Decades of civil war in the 1970s and 1980s have all but ruined its health infrastructure. It is only since the late 1980's, and the

return to peace for most of the country, that the health system has begun to rebuild itself, with significant external financial assistance. The last two decades have not been without challenge, as Uganda's health system continues to deal with rapid population growth, a high burden of diseases, rapid decentralization insufficient health system resources, and dependence on donor funds.

Uganda's population has recently surpassed 33 million (World Bank 2011), growing at about 3.2% per year (Government of Uganda - Ministry of Health 2010). Most of its population is rural – in 2009, only 13% of its population was living in an urban area (World Health Organization 2009). About one in four people (24.5%) currently live below the international poverty line of $1.25 per day (although poverty rates were significantly higher in the 1990's) (World Bank 2011). Rural poverty rates are three times as high as urban poverty rates (27.2% and 9.1%, respectively) (Uganda Bureau of Statistics 2010). Poverty rates are highest in Uganda's Northern region (~46%) and lowest in the Central region (~10%) (Uganda Bureau of Statistics 2010).

The Ugandan population still faces the challenges of high under-5 mortality (128/1,000 live births) and high maternal mortality (430/100,000 live births), as well as a significant burden of infectious diseases, particularly HIV/AIDS, malaria, and tuberculosis (World Health Organization 2009). HIV/AIDS prevalence is high at 6.2%. Malaria is critical in Uganda – causing high morbidity, mortality, and economic losses. In regards to the TB burden, Uganda was ranked 16th in the most recent WHO Global TB report, although treatment success rates and case-detection rates are slowly increasing (Government of Uganda - Ministry of Health 2010). In addition, non-communicable diseases, such as cardiovascular diseases, diabetes, cancers, and injuries are on the rise and a significant contributor to the burden of disease.

Although the Ugandan government has committed to an ambitious National Minimum Health Care Package and about 75% of the Ugandan population lives within 5km from a health facility (either public or PNFP; unknown for private) (Government of Uganda - Ministry of Health 2010) however, resource constraints and weak management constrain the utilization of health services.

The Ugandan health sector continues to depend on external resources for health financing, which are invested into the health system through a sector-wide approach (SWAp) arrangement (an aid modality allowing donor and national resources to support, in this case, national health policy and expenditures). Uganda's total health expenditure of 8.2% of GDP, with general government expenditure representing about 20% of total health expenditure (World Health Organization 2009). Out of pocket payments are responsible for over half of the private health expenditures, which account for 80% of total health expenditures (World Health Organization 2011). User fees have been abolished in public health facilities since 2001, but remain in private wings of public facilities and in the private sector. However, while out-of-pocket expenditures as percent of private health expenditures decreased after fees were abolished from 56.7% to 52%, they have been recently on the rise and steady around 65.4% (World Health Organization 2011).

HEALTH SYSTEM INFRASTRUCTURE AND ORGANIZATION

Uganda has been undergoing rapid decentralization of the public health system since the mid-1990s. Consequently, health service delivery is the responsibility of districts and health sub-districts. The rapid decentralization has left some major gaps in the leadership at these lower levels, with compromised supervision and inadequate funding and logistics management (Government of Uganda - Ministry of Health 2010). The public health sector is serviced by several levels of facilities: National Referral Hospitals and Regional Referral Hospitals, General Hospitals, Health Center IVs, Health Center IIIs, and Health Center IIs (Government of Uganda -

Ministry of Health 2010). Village health teams, which are comprised of community health workers, are intended to represent Health Center I (Government of Uganda - Ministry of Health 2010). According to data from the latest National Health Policy, only one third (28%) of HCIVs were fully operational in 2008 (Government of Uganda - Ministry of Health 2009).

Uganda's post-colonial health system has been traditionally based on public sector delivery, but the private health sector in Uganda is significant. The private health sector includes both private-not-for-profit (PNFP) providers, as well as private health practitioners, who operate on a for-profit basis (PFP). The PNFP sector is, at times, considered as an extension of the public sector. For example, health sub-district teams are responsible for the supervision of both public and PNFP sector activities (Government of Uganda - Ministry of Health 2010). The PFP sector, on the other hand, has few linkages with the public sector. The PFP sector is most heterogeneous, including both formally trained and informal providers, as well as traditional healers. Furthermore almost half (45%) of all of private for-profit health providers are found in the Kampala District. (Mandelli, Kyomuhangi et al. 2005). Recent studies found that both poor and rich people use the PFP sector. More than half (53%) of the population in the lowest income quintile and two thirds (67%) of the population in the highest income quintile in Uganda receives care from PFP providers of modern medicine, part of the formal PFP and not including traditional healers and other informal PFP providers (International Finance Corporation 2008). The pattern of utilization holds for rural and urban areas, where 62% and 76% of the population, respectively, receive care from PFP providers of modern medicine (International Finance Corporation 2008).

In the private not-for-profit (PNFP) the vast majority of services are provided through faith-based organizations such as the Uganda Catholic Medical Bureau, Uganda Protestant Medical Bureau, Uganda Orthodox Medical Bureau, and the Uganda Muslim Medical Bureau (the first two owning the vast share of facilities).

HUMAN RESOURCES FOR HEALTH IN UGANDA

On average, the latest data show that Uganda has 14 doctors/assistant doctors per 100,000 inhabitants. However, this figure ranges from 117 per 100,000 in Kampala to 3 per 100,000 in some more remote districts (World Health Organization 2006). Health workforce density also varies among cadres. For example, Uganda has around 1.17 physicians/10,000 population and 13.1 nurses/midwives per 10,000 population. While the ratio of physicians is about the same as the average in SSA, Uganda's ratio of nurses and midwives/10,000 population is double the average for SSA (World Health Organization - African Health Workforce Observatory 2009).

Ugandan health facilities struggle with high vacancies. In 2008, 52% of national level positions were filled (Government of Uganda - Ministry of Health 2009). These high vacancy rates highlight both the broad shortage of providers and also potential bottlenecks to recruitment and other health workforce management processes. At the core of the challenges in HRH lies a severe lack of resources for health worker salaries, which, in conjunction to the overall management, infrastructure, equipment, and supervision challenges, has also fueled the migration of Ugandan health professionals abroad or to the private sector.

For those hired by the system, monthly salaries of public sector health workers are low compared to the region. In 2009, physicians earned between $300 and $630 per month, depending on their seniority; nurses earned from a little over $100 to around $450 per month, depending on education level and seniority (enrolled nurse/midwife to registered nurse); allied health professionals, such as clinical officers, earned within a similar range as nurses, between $100 to $450 per month, depending on seniority (World Health Organization - African Health Workforce Observatory 2009). During the last fiscal year, wages for health workers in Uganda had improved somewhat. For example, medical workers' salaries start at around $370. Medical officers can earn in between $390 and $620 (Government of Uganda - Ministry of Public Service

FY 2012/2013). The salary increase from FY 2009 comes in response to yearly, recurrent health worker strikes from the 1990s.

Although the government has developed policies for the management, recruitment, supervision, motivation and retention of health workers, their lax implementation, lack of adequate funding, and poor general civil service management (e.g. payroll system delays can be as long as 6 months for newly recruited cadres), have led to low health worker morale, high absenteeism, and severe geographic misdistributions. The majority of Uganda's health workforce is concentrated in areas of the country where additional earning opportunities or benefits for their families are available – meaning urban areas, particularly in the Central region. Although over 7,000 health workers were recruited in FY 2012/2013 to serve in remote areas, most of them are expected to leave by the end of their 2 year commitment.

Low salaries, poor infrastructure, unmanageable workloads, staff shortages, and absenteeism lead to low health worker satisfaction in Uganda's public sector. For example, more than two thirds of physicians (70%) were unsatisfied and almost half (46%) reported that they would leave Uganda if such an opportunity presented itself (Luboga, Hagopian et al. 2011). Physicians in this study suggested that, while emigration was an option, many of them were considering sector migration – from public to private.

Professional development opportunities are one set of incentives that the government often makes available for its civil servants and taking advantage of such opportunities is key for promotion. Indeed, a recent study found that "access to higher education" is very important to a majority of physician respondents – and it was important enough to consider switching jobs (Luboga, Hagopian et al. 2011). According to the same study, only a quarter of Ugandan physicians thought that their employer offered them enough promotion opportunities (Luboga, Hagopian et al. 2011).

DUAL PRACTICE IN UGANDA

In Uganda, there is a perception that almost all government health workers are perceived to have some sort of additional job. The single estimate identified so far is from a 2005 nationally representative survey of private health facilities, which found that more than half (54%) of private sector doctors also worked in the public sector (Mandelli, Kyomuhangi et al. 2005). Similar estimates from the public sector are not available. Furthermore, data on nurses' and clinical officers' private sector activities are not available for Uganda. However, informal discussions with nurses, propose that a significant proportion of public sector nurses have multiple jobs. Government health providers' can have a variety of additional jobs. For example, Asiimwe and colleagues found that, in a rural clinic in Uganda, public sector providers' private activities included informal charging, agriculture and livestock rearing, stealing and selling drugs or operating drug shops, training of nursing aides, buying and selling gloves, running private clinics, treatment of patients at home, and selling homemade goods (Bennett, McPake et al. 1997).

Currently, opportunities for dual practice are most evident in the Central Region of the country. More than two thirds of these private facilities (68%) are in the Central Region and almost half of them (46%) are concentrated in the Kampala District. Yet, the private sector remains fragmented and unregulated and the effects on service utilization, especially by the poor, are unknown. These concerns were raised by policymakers in a recent participatory study on priority research questions in health where dual practice was discussed in relation to issues of health worker distribution(Asiimwe 2008). In this study, policymakers expressed concerns that "dual practice of public health workers [was] reported to greatly affect the performance of the public sector. The dual practice of public health workers has implications on the quality and management of health care delivery, such as indiscipline, time loss and poor work ethics"

(Asiimwe 2008). Studies of the effects of dual practice on service delivery in Uganda have not been found.

The legal status of dual practice in Uganda is unclear. Both health providers and policy-makers state in informal discussions that public sector health providers are not allowed to work outside of government facilities, either in addition to or during regular working hours. At the same point in time, none of them was able to point to a specific government policy document that would clearly spell this out. The Uganda Medical and Dental Professionals Council website does not include a definition or implications of any of these misconduct counts, nor is it clear which cadres are linked to these reports. Furthermore, there is no discussion of dual practice or explanation of consequences in instances when providers neglect their duties. Other information from the other councils, on this topic, was not available from their websites. Table 4 summarizes the policy quotes relevant to dual practice, from national-level policies in Uganda.

CONCEPTUAL FRAMEWORK

The conceptual framework illustrated in Figure 2 seeks to acknowledge the multi-faceted nature of dual practice in Uganda. Three theoretical approaches, which have not been previously used in the context of dual practice, underpin the development of this conceptual framework: market systems approach, complex adaptive systems, and individual motivation. Together they aim to create a framework by which to examine dual practice holistically, expanding the boundaries of the system in which it occurs, beyond those typically adopted by previously used economic theories (e.g. job complementarity, hours constraints) (Berman and Cuizon 2004).

Examining dual practice using elements of a health market system framework acknowledges that pluralistic or mixed systems with poorly organized markets are the new norm in most developing countries. Mixed systems are characterized by "centrally planned government health services that operate side-by-side with private markets for similar or

complementary products and services, which often existed long before the creation of national health ministries and have grown organically" (Lagomarsino, Nachuk et al. 2009; Nishtar 2010). Learning in mixed systems occurs when one moves beyond the traditional understanding of the roles of government and private sector (Bloom and Standing 2001; Bloom, Champion et al. 2009; Louviere and Flynn 2010; Soucat and Scheffler 2013). In this thesis, the market system framework guides the exploration of the roles played by public and private sector actors vis-à-vis dual practice.

A growing body of literature focuses on the complex and adaptive nature of health systems (Plsek and Greenhalgh 2001; deSavigny and Adam 2009; Paina and Peters 2011; Pourbohloul and Kieny 2011; Adam and de Savigny 2012; Swanson, Cattaneo et al. 2012). Health systems contain a large number of elements that interact dynamically through non-linear exchanges and feedback; they have the capacity to adapt, self-organize, and learn (Cilliers 2005; Paina and Peters 2011). Models assuming a health system comprised of a small number of actors, exhibiting predictable, linear behavior and interactions cannot capture dynamic patterns, unintended consequences, and adaptive behaviors. Using a complex adaptive system lens relaxes the assumptions of traditional models and focuses research questions on adaptation, feedback, and heterogeneity in the health system, so as to capture interactions between the public and private sectors, intended and unintended consequences, as well as formal and informal system responses to dual practice.

To obtain a deeper understanding of the individual provider's behavior and motivation, the framework also draws upon ideas from the literature on workforce motivation. Franco and Bennett's conceptualization of public sector health care provider motivation was used (Franco, Bennett et al. 2002). Their perspective recognizes that several layers of determinants of motivation influence public sector health care providers: individual and internal, organizational, broader societal and health system (Franco, Bennett et al. 2002). Furthermore, their perspective recognizes that both financial and non-financial factors play a role in health worker motivation

(Franco, Bennett et al. 2002). The framework for public sector health provider motivation is complemented by ideas from random utility theory, which underpins the preference elicitation methods that will be used in this thesis (Louviere, Hensher et al. 2000; Ryan, Gerard et al. 2008; Louviere and Flynn 2010).

Figure 2 illustrates the framework developed based on these theoretical underpinnings. The framework was developed by adapting Bloom and colleagues' market system framework, which displays, at the core, the interaction between supply and demand and influences by a variety of actors groups (Bloom, Champion et al. 2009). In the context of dual practice, it is the public sector supply of providers, which is of greatest interest. More specifically, the focus is on the interaction between public sector providers, who might have dual practice and health managers. Dual practice providers are not only linked to the public sector, but also to the private for-profit and the private not-for-profit sectors. The various market system actors, such as representative bodies, illustrate the multiple perspectives from which dual practice is important and guided the selection of participants from this study. The framework also highlights the fact that the rules and governance for dual practice not only come from system actors (see dashed arrows), but also from various sets of rules – health and non-health, formal and informal. At the individual provider level, the framework acknowledges both financial and non-financial incentives. Not illustrated in the framework are the effects of dual practice, which can impact individuals, health facilities and the health system service delivery and performance. Based on the literature, these could be either positive or negative.

RESEARCH GOAL, OBJECTIVES, AND QUESTIONS

RESEARCH GOAL

The overall goal of this dissertation is to provide an in-depth understanding about dual practice in Uganda, including local system adaptations, perceived consequences on health system

actors, and potential policy interventions. The findings from this study contribute to a small, but growing body of literature on public-private sector interactions and health workforce distribution issues, as well as on examining health systems problems holistically, through a complex adaptive system lens and using a mixed methods design. Specifically, the findings will make two significant contributions to health systems research and public health work.

- First, they will contribute empirical evidence to inform policy discussions on dual practice in Uganda.
- Second, they will contribute to the broader literature on understanding health workforce distribution, the complex and adaptive nature of mixed health systems, and the use of preference elicitation methods to inform policy and practice.

SPECIFIC OBJECTIVES

In order to address the research goal, this study has the following three specific objectives:

- **Specific objective 1:** To develop an in-depth, multi-dimensional description of dual practice in Kampala, Uganda.
- **Specific objective 2:** To explore how dual practice evolved in the Ugandan health system and what formal and informal management practices emerged in response.
- **Specific objective 3:** To assess the preferences of public sector doctors and nurses for dual practice consequences on service delivery and for dual practice policy options.

RESEARCH QUESTIONS

Each specific objective aims to answer a set of research questions. This section presents the research questions related to each specific objective, and summarizes the approach whereby answers for these questions will be obtained.

1. **Research questions under Specific objective 1**

Specific objective 1 guided the development of a framework for creating an in-depth description of dual practice in Kampala, from multiple perspectives and levels in the Ugandan health system. The research questions that guide this objective include:

- What are the key characteristics of dual practice, in order to obtain an in-depth understanding of the phenomenon?
- How do opportunities for dual practice differ between public sector doctors and nurses (as well as among doctors and among nurses?)

Manuscript 1 presents a framework that can be used to describe the multiple aspects of dual practice. Based on a mixed-methods approach, it presents an analysis of data from qualitative interviews from five public health facility case studies, as well as from key policy stakeholders. Additionally, it presents an analysis of a best-worst object scaling exercise, a quantitative preference elicitation technique, which sought to develop an understanding of the beliefs and perceptions that doctors and nurses have about the effects of dual practice on the Ugandan health system.

2. **Research questions under Specific objective 2:**

Specific objective 2 facilitated an examination of how dual practice evolved and how it is currently managed in the Ugandan system. The questions guiding this objective include:

- What are key historical developments related to dual practice in Uganda?
- What informal management practices have developed with public sector facilities?
- What emergent behaviors, self-organization, feedback, and unintended effects can be identified in Uganda in the context of asking the aforementioned research questions?

Manuscript 2 answers these questions, using a complex adaptive system lens. It presents an analysis of qualitative interviews from five case studies of public sector facilities in Kampala, health providers and health facility leadership being the embedded units of analysis, as well as from key policy stakeholders. Additionally, it develops a causal loop diagram based on the information gathered from the case studies, policy stakeholder interviews, and a review of relevant documents to illustrate feedback in the system and how it changes over time.

3. **Research questions under specific objective 3:**

Specific objective 3 focused on assessing the preferences of public sector doctors and nurses for dual practice consequences on service delivery and health systems and on dual practice policy elements. The following research questions guide this objective:

- What are the perceived effects of dual practice on the health system?
- How do public sector doctors and nurses perceive the effects that dual practice has on the health system?
- What are the perspectives of public sector health workers and policy stakeholders on having a dual practice policy?
- What policy elements do public sector health workers and policy stakeholders propose, should a policy on dual practice be developed?
- What are the policy preferences of public sector doctors and nurses on dual practice?
- How do the policy preferences for dual practice differ between doctors and nurses in Kampala, Uganda? And between specialist doctors and generalist doctors?

Manuscript 3 and 4 summarize answers to these questions using a mixed methods approach. In Manuscript 3, data from qualitative case studies and stakeholder interviews provided an in-depth understanding about the consequences of dual practice, as perceived by multiple

stakeholders. A best-worst object scaling was used to elicit the relative priority that government providers place on a subset of key consequences.

In Manuscript 4, qualitative data was used to determine whether there is demand for a policy on dual practice among multiple stakeholders. Additionally, the data was used to identify key policy recommendations for dual practice, from the perspective of doctors, nurses, health managers, and policy stakeholders. Finally, public sector doctors and nurses' policy preferences are obtained from a best-worst profile scaling exercise, a quantitative preference elicitation technique.

RESEARCH DESIGN

The complexities inherent to our research objectives, as well as to the topic of dual practice, in general, call for mixed methods study design (Creswell and Plano Clark 2011). In the context of dual practice in Uganda, the mixed methods study design is proposed for the purposes of triangulation (i.e. seeking convergence, corroboration, and correspondence among the different health market system actor); complementarity (i.e. seeking elaboration and illustration); and development (i.e. using results from one method to inform another) (Greene, Caracelli et al. 1989). A sequential exploratory design guided this study (Creswell and Plano Clark 2011). This design involved a qualitative phase collected and mostly analyzed before embarking on a quantitative phase. The exploratory design is well suited for this study because dual practice has not been previously examined from the perspective of doctors, nurses, health managers, and policy stakeholders in Uganda, and therefore relevant quantitative instruments do not exist. Furthermore, it is expected that the qualitative component of the research will assist in identifying new emergent research questions, which cannot be answered with the qualitative data alone (Creswell and Plano Clark 2011). The flexibility of the exploratory design to allow for an evolution of the underlying philosophical assumptions is another important advantage (Creswell and Plano Clark 2011).

Pragmatism is one of the most frequently adopted worldviews for mixed methods research. This stance combines elements of postpositivism and constructivism. Pragmatism proposes that both single and multiple realities exist (ontology), that data collection is driven by "what works" to address the research question (epistemology), and that researchers accomplish this by combining and mixing quantitative and qualitative data (methodology) (Creswell and Plano Clark 2011). Figure 3 illustrates the main components of the proposed methodology, their links to the research objectives, their sequence and the tools that will be used. The qualitative component comprised of multiple case studies in five public sector health facilities, in which health facility leaders and health providers serve as embedded units of analysis. Interviews with policy stakeholders - in both government and non-government institutions - complement the case studies. The quantitative component comprises of a cross-sectional, self-administered questionnaire, designed based on the qualitative findings. The questionnaire includes a preference elicitation exercise as well as demographic questions targeted at doctors and nurses in public sector facilities.

Data integration was planned at several points in the design and analysis of this study. First, the qualitative data helped us to *develop* the design and content of the self-administered survey. Second, in presenting the findings, the qualitative data *complemented* the relevant descriptive, quantitative data and helped interpretation and contextualization of the findings. Finally, in our discussion, the findings from the quantitative questionnaire were interpreted in light of the qualitative case studies, for purposes of *triangulation* (Creswell and Plano Clark 2011).

ETHICAL APPROVALS

Ethical approvals were obtained from the Institutional Review Board of the Johns Hopkins Bloomberg School of Public Health (IRB No. 4371), the Makerere University College of Health Sciences - School of Public Health Higher Degrees, Research, and Ethics Committee (IRB

No. 11353), the Mulago Research Ethics Committee (Protocol no. 249), and the Uganda National Council for Science and Technology (Ref. No. SS 2883).

ORGANIZATION OF THIS DOCUMENT

The remainder of this dissertation contains five chapters. Four of these chapters correspond to stand-alone manuscripts:

- In Chapter 2, data gathered through mixed methods is used to develop a framework intended to capture the multi-dimensional nature of dual practice. The framework is applied in Kampala, Uganda. (Manuscript 1)
- In Chapter 3, qualitative case study data is used to explain the complex patters that characterize the evolution of dual practice in Uganda and current local management practices in government facilities. A causal loop diagram illustrating the development of dual practice-related feedback among health system actors complements the qualitative data. (Manuscript 2)
- In Chapter 4, government providers' perceptions on the consequences of dual practice are presented. Provider priority scores are obtained using a best-worst object scaling preference elicitation survey. (Manuscript 3)
- In Chapter 5, data obtained from mixed methods is used to explore health providers' preferences for policy options on dual practice. Provider preferences are obtained using a best-worst profile scaling preference elicitation survey. (Manuscript 4)

A conclusion chapter (Chapter 6) summarizes key findings, policy implications, overall strengths and limitations, as well as future research directions. Tables and figures are presented at the end of each chapter. A consolidated list of references can be found at the end of Chapter 6.

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TABLE 1: SUMMARY OF COUNTRY DATA FROM LITERATURE ON DUAL PRACTICE HOURS AND EARNINGS

Country	Provider type	Dual practice			Public sector Avg. hrs./week	Reference
		Avg. hrs./ day	Avg. hrs./ week	Income		
Bangladesh	Doctors	2.7	15	n/a	n/a	(Gruen, Anwar et al. 2002)
Vietnam	Doctors	n/a	15	90% of govt. salary	43	(Vujicic, Shengelia et al. 2011)
Thailand	Doctors	n/a	18	2x govt. salary	21-23	(Prakongsai 2005)
Portugal	Nurses	n/a	9-15	n/a	n/a	(Ferrinho, Biscaia et al. 2007)
China	Doctors	n/a	n/a	1/2x govt. salary	n/a	(Bian, Sun et al. 2003).
UK	Doctors	n/a	n/a	3x govt. salary	n/a	(Humphrey and Russell 2004)

TABLE 2: SUMMARY OF POTENTIAL DUAL PRACTICE EFFECTS ON SERVICE DELIVERY*

(a) Potential negative effects	
Quality reduction	- Decreased provider effort in the public sector, absenteeism - Long waiting times/lists
Patient Diversion	- Increased public sector costs due to "cream-skimming": referring less complicated/ill patients to the private sector and/or more complicated cases to the public sector
Misuse of public sector funds	- Leakages of public sector pharmaceuticals and medical supplies - Using public space and equipment to treat private patients
Reinforcing mal-distributed workforce	- An attractor for health works to urban, more developed areas, where the private sector opportunities are profitable.
Creating inequity in access	- In developing countries, it creates a two-tiered healthcare system – with lower quality and potentially greater burden of disease in public system - Contributes to informal fees, even in systems where user fees abolished in the public sector
(b) Potential positive effects	
Complementing the public sector incentive package	- Increases the government's capacity to recruit quality providers at lower costs and maximize the utilization of high-skilled providers - Reducing informal payments and corruption at the facility level
Improving access to care	- Patients have more choice, often quicker access due to broader array of operating hours, shorter waiting times - Incentivizes doctors to stay in the public sector, and might reduce brain drain
Allowing for public services to be more targeted to the poor	- Assuming providers ensure similar levels of quality in both their practices, by diverting richer patients to the private sector, they are contributing to an informal cross-subsidization of services for the poor in the public sector
Stimulating technology transfer	- Dual practice could be a bridge for the transfer of knowledge, practices, and technologies between the public and private sectors

Note: *This summary was adapted from (Berman and Cuizon 2004; García-Prado and González 2006; Garcia-Prado and Gonzalez 2011) with additions from other articles in the literature

TABLE 3: POLICY OPTIONS FOR THE REGULATION OF DUAL PRACTICE

Policy type	Dual practice regulation	Details	HIC examples	LMIC examples
Limiting policies/ restrictions	**A. Complete prohibition**	A full ban on dual practice. Providers affected by ban vary by country.	Canada, Greece	China, India, Indonesia, Kenya, Zambia
	B. Restrictions on private sector activities	a) Private earnings cannot exceed a certain percentage of gross income; b) Restriction on # hrs in private sector	a) UK, France b) USA	a) N/A b) Indonesia
	C. Restriction on licensure	Mandatory licensure for private practice	N/A	Indonesia, Kenya, Zimbabwe
	D. Regulate private practice activity	Limit on the type of services offered by private sector; ceilings on private fees	Canada, France	N/A
Rewarding policies	**A. Incentivizing exclusive public service**	Flexible public contracts with salary supplements and career incentives, such non-private practice allowance.	Portugal, Spain, Peru, Greece, Italy	India, Thailand
	B. Raising health worker salaries	Making public sector salaries more competitive	Norway (research project)	Bangladesh (research project)
	C. Allowing private practice in public facilities	Reserving a percentage of beds/space for treating private patients (i.e. private wings)	Austria, England, Ireland, Italy, Germany, France	N/A
	D. Self-regulation	Professional organizations curb undesirable practices	N/A, although likely implicit in HIC policies	S. Africa
	E. Performance-based remuneration	Private providers contracted to provide services for public sector, pay is performance-based	Austria	N/A in the dual practice context
No regulation	**A. No restrictions**	No restrictions on dual practice	N/A	Egypt, Indonesia

***Note**: the country examples are not intended to be exhaustive; rather, the relatively small number of countries with literature on the topic highlights the dearth of evidence on the topic. Policy options are adapted from (Kiwanuka, Rutebemberwa et al. 2011)

TABLE 4. UGANDAN NATIONAL-LEVEL POLICY QUOTES RELEVANT TO DUAL PRACTICE

Policy	Relevant text
Ministry of Health Human Resources for Health Policy (2006)	Government will "allow and encourage private practice by all registered cadres, subject to applicable licensing, registration, regulatory requirements, terms and conditions of employment, and effective supervision by appropriate authorities" (Government of Uganda - Ministry of Health 2006). "Private practice is encouraged in the Public/Private Partnership for Health context, though the activities of some government staff in this regard is a matter of concern" (Government of Uganda - Ministry of Health 2006).
Ministry's of Public Service Uganda Public Service Standing Orders (2010) (applies to all civil servants)	"A public officer shall not engage in any occupation or undertaking for gain outside his or her official duties *which would require his or her attention at any time during official working hours*" (Section F-e, pg. 102, emphasis added). - "holding more than one *fulltime* employment concurrently" is a type of misconduct (Section F-s, pg. 128, emphasis added). "acts involving turpitude e.g. theft, corruption, negligence causing loss to the Government, unauthorized use and possession of Government Property or facilities, unsatisfactory performance of duty, absence from duty without permission, lateness for duty, making false statement" (Section F-s, pg. 128 (Government of Uganda - Ministry of Public Service 2010)).
Ministry of Public Service Code of Conduct and Ethics for the Uganda Public Service (2010), (appendix to Standing Orders)	"a Public officer shall not hold two jobs at any point in time (moonlighting), and shall not draw two salaries from Government payrolls" (Appendix F-5, pg. 305 (Government of Uganda - Ministry of Public Service 2005; Government of Uganda - Ministry of Public Service 2006; Government of Uganda - Ministry of Public Service 2010)).
Ministry of Health Public Private Partnership in Health Policy (2011)	No mention of dual practice (Government of Uganda - Ministry of Health 2011)
Establishment of private wards in government hospitals (actual policy document not identified)	Hospital-regulated wards where doctors and nurses who meet certain criteria can provide care to private patients, who pay on a fee-for-service basis. Government health workers formally charge patients for services provided in private wings, although these fees are not as high as in the private sector and the hospital retains a proportion of them. It is not clear when the private wards were first established, but, based on respondents' estimates, it happened around 30 years ago. Private wards now exist in major public hospitals in Kampala.

FIGURE 1: MAP OF UGANDA

Source: Map from https://www.cia.gov/library/publications/the-world-factbook/maps/maptemplate_ug.html, accessed October 2011.

FIGURE 2: DUAL PRACTICE IN UGANDA – CONCEPTUAL FRAMEWORK

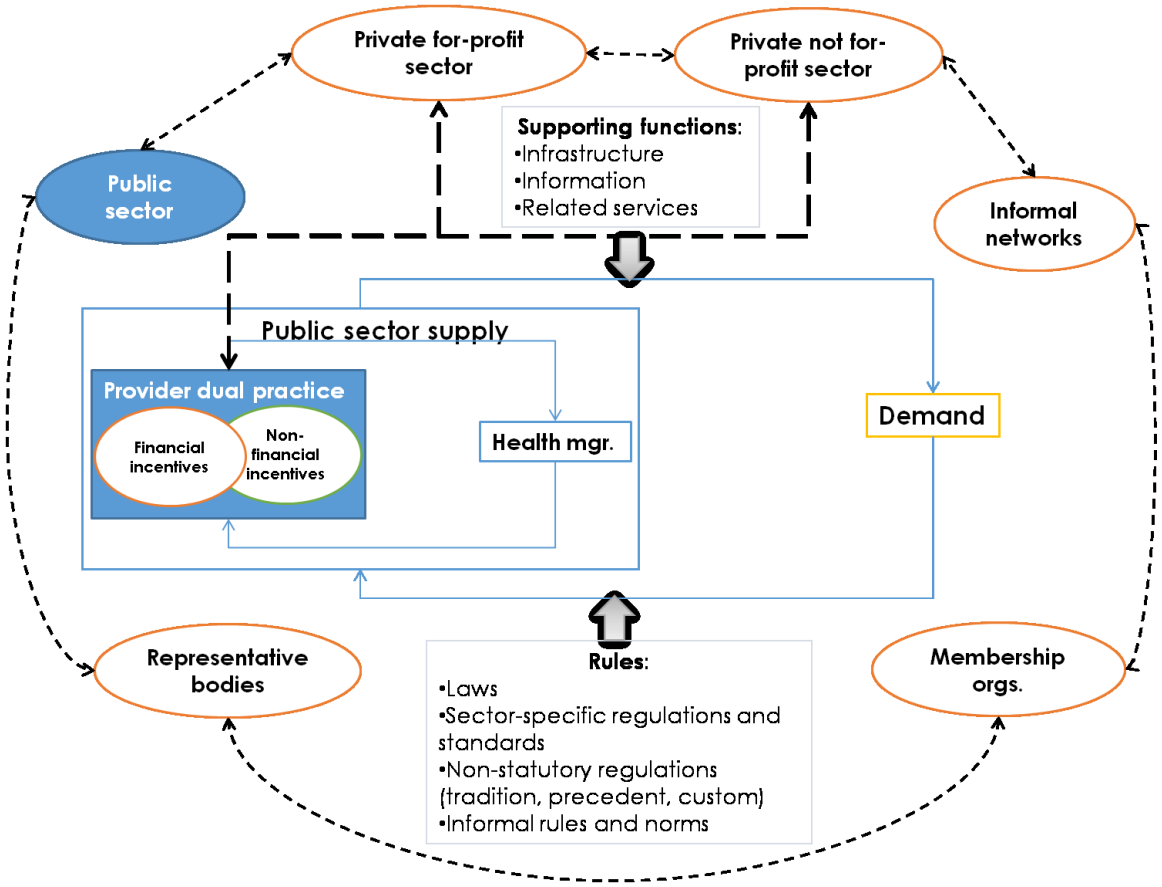
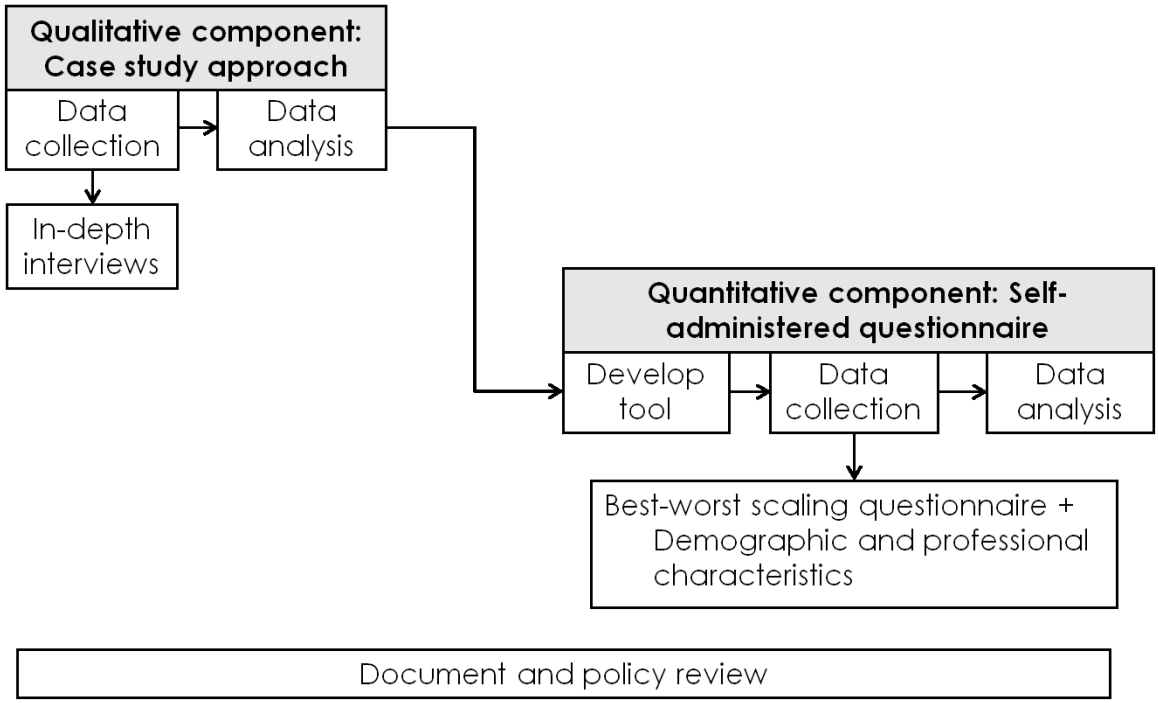


FIGURE 3: MIXED METHODS RESEARCH DESIGN



CHAPTER 2: A FRAMEWORK FOR UNDERSTANDING DUAL PRACTICE IN KAMPALA, UGANDA (MANUSCRIPT 1)

ABSTRACT

Background: Full-time government health workers often hold more than one job – a phenomenon called dual practice. However, most of the literature on dual practice in low and middle-income contexts is limited and narrowly focused on physicians. Lacking empirical evidence on dual practice, policy discussions often rely on perceptions and anecdotal evidence. This paper presents a framework to guide the documentation of multiple dimensions of dual practice and applies it in Kampala, Uganda.

Methods: A sequential exploratory mixed methods design guided data collection. Semi-structured in-depth interviews conducted with doctors, nurses, and managers in five government health facilities in Kampala were complemented by policy stakeholder interviews. Based on the analysis of the qualitative data, as well as on a review of the literature, a questionnaire was self-administered to government doctors and nurses in ten government health facilities in Kampala.

Findings: A framework to capture the multiple dimensions of dual practice was developed and applied to describe dual practice in Kampala. The framework identifies individual, organizational, and health system factors that describe dual practice. In Kampala, multiple types of health workers were believed to have dual practice, but health system actors lacked a consistent definition for this phenomenon. Differences in dual practice characteristics were identified not only between doctors and nurses, but also among general practitioners and specialist physicians. While respondents reported significant financial incentives from dual practice, non-financial incentives were also emphasized. Complementarities between public and private sector incentives for providers in dual practice were identified.

Discussion: The differences in dual practice characteristics identified among cadres highlight the importance of studying dual practice holistically – for multiple cadres and from multiple perspectives – and understanding the range of financial and non-financial incentives stemming from both the public and private sectors. Capturing the multiple characteristics of dual practice could allow tracking how dual practice changes over time, and comparing dual practice characteristics across settings.

INTRODUCTION

Dual practice, when full-time government health workers hold more than one job is present in many health systems, particularly in low and middle income countries (LMICs). Studies show that over one third of physicians in Vietnam and Cote d'Ivoire, 40% in Sri Lanka and Zimbabwe, and as high as 80% in Indonesia and Bangladesh held second jobs (Chomitz, Setiadi et al. 1998; Gruen, Anwar et al. 2002; Berman and Cuizon 2004; Gupta and Dal Poz 2009; Vujicic, Shengelia et al. 2011).

Dual practice started to recently draw new attention from both health sector policy-makers in low and middle income countries (Asiimwe 2008; Ranson, Chopra et al. 2010) and researchers (Garcia-Prado and Gonzalez 2011; Kiwanuka, Rutebemberwa et al. 2011; Kiwanuka, Rutebemberwa et al. 2011; Socha and Bech 2011; Cheng, Joyce et al. 2013; Ensor, Serneels et al. 2013; Hipgrave and Hort 2013), their interests being primarily in how dual practice affects access, quality, and efficiency in the health system and related policy responses. Concerns usually revolve around potential negative consequences of dual practice on service delivery, such as provider neglect of public sector patients and overall decreased quality of services in public sector settings. Additionally, concerns are also raised about potential contributions of dual practice to broader health system inefficiencies, for example through increased absenteeism in the public sector and pilfering of drugs.

However few studies on dual practice in LMICs are available. Findings on dual practice in high-income settings cannot be generalized to LMIC settings, where the nature of the private sector is more diverse and typically unregulated, and the public sector governance and regulatory framework is generally weak (Garcia-Prado and Gonzalez 2011). The existing empirical studies focus largely on physicians' dual practice, although multiple types of health workers are perceived to have multiple jobs. Furthermore, few of the existing studies on dual practice capture all facets of dual practice – for example, both financial and non-financial incentives, private

sector earnings or how providers share their time between their multiple jobs. Because empirical evidence on dual practice is scarce, particularly in developing countries, policy-makers often rely on incomplete information or anecdotal evidence and personal perceptions for understanding this phenomenon, and for policy discussions and planning.

This paper contributes to the evidence on dual practice in LMICs, by developing a framework to guide the development of a multi-dimensional description of dual practice. The framework can be used to develop comprehensive summary of dual practice in a particular setting, which can be used for policy and planning decision, to capture dimensions of dual practice that can differ over time or across contexts. The framework is applied in Kampala, Uganda. The single available estimate of dual practice in Uganda stems from a 2005 nationally representative survey of private health facilities, which found that more than half (54%) of private sector doctors also worked in the public sector (Mandelli, Kyomuhangi et al. 2005). The percentage of government providers also working in the private sector is unknown; however it is perceived that, in Uganda, almost all government health workers are engaged in dual practice. Data on nurses' and clinical officers' private sector activities is not available for Uganda.

A SUMMARY OF THE LITERATURE ON DUAL PRACTICE

Existing studies about dual practice generally focus on capturing what motivates government provides to have multiple jobs, the effects that dual practice has on access, quality, and efficiency, and the policy and regulatory responses linked to provider dual practice. Studies focusing on particular countries sometimes also describe the prevalence of dual practice and how providers share their time between their two jobs. This section summarizes what is currently known about dual practice in LMIC settings, according to these dimensions.

Provider motivation for engaging in dual practice varies. The most evident reasons for taking on an additional job are financial, given that providers can double or even triple their earnings through private practice. However, non-financial incentives – in both the public and

private sectors – are also at play (Ferrinho, Van Lerberghe et al. 2004; Garcia-Prado and Gonzalez 2011). The public sector generally pays health workers very little. However, it offers job security, and in some instances prestige. For certain types of providers, such as surgeons, the public sector position also offers access to equipment that individual providers could not purchase on their own. In addition to the supplementary earnings, the private sector also offers a different environment, at times with better infrastructure and also potential research and professional development opportunities.

How much time providers spend, as well as how much they earn in their various jobs when engaged in dual practice, have not been frequently documented. A few examples of dual practice in various countries are summarized in Table 1, according to the provider types included in the study, time spent in dual practice as compared to time in the government job, and income. Except for the number of hours that physicians declared they spent in dual practice, where we saw some consistency among countries, and the general agreement that providers can earn a significant amount of money in the private sector, much remains unknown. The incentives to maintain the public sector job are seldom documented in these studies.

Dual practice can affect the health system in various ways. On one hand, negative consequences, such as quality reduction in the public sector services due to decreased provider effort, the diversion of patients, particularly healthier ones, to the private sector, and the misuse of public sector equipment, are the most frequently cited concerns about dual practice, although studies to estimate the specific impact do not exist. Additionally, dual practice might also contribute to re-distribution of the health workforce, whether between the private and public sectors, or rural and urban areas. On the other hand, dual practice could positively contribute to the retention of professionals in the public sector and to improving access to health care by provider greater choice to patients, as well as more convenient operating hours. Furthermore, where providers refer their wealthier patients to the private sector, dual practice might

theoretically allow for public services to better target the poor. Finally, dual practitioners could act as vehicles for knowledge, technologies and practices between the two sectors (Berman and Cuizon 2004; García-Prado and González 2006; Garcia-Prado and Gonzalez 2011).

The policy options for regulating dual practice fall into the following categories: banning dual practice, allowing dual practice using "limiting" or restrictive policies, allowing dual practice using "rewarding" policies, or allowing dual practice with no restrictions (García-Prado and González 2007; Kiwanuka, Rutebemberwa et al. 2011; Hipgrave and Hort 2013). Only a few countries formally banned dual practice (e.g. China, some states in India) (Garcia-Prado and Gonzalez 2011). Rewarding policies offer favorable contracts for those agreeing to work exclusively in the public sector, typically a mixture between higher public sector pay and non-financial incentives, as well as the right to see private patients in public facilities. Limiting policies restrict private sector income or the number of hours that government workers can spend delivering care in the private sector, or by self-regulation through professional and civil society organizations (Garcia-Prado and Gonzalez 2011). Allowing dual practice without restrictions currently occurs in contexts where the public sector lacks the capacity to hire all physicians (e.g. Indonesia, Egypt), but such an approach is unlikely in countries facing severe health workforce shortages (Kiwanuka, Rutebemberwa et al. 2011).

A scan of the existing literature revealed that detailed descriptions of dual practice, exploring its dimensions at various levels of the health system the various dimensions of dual practice are rare. Furthermore, existing studies do not always use the same guiding dimensions to document dual practice. For example, the income derived from private sector activities and the number of hours spent in private are not consistently documented. Such gaps in information fail to provide decision-makers with concrete information about what dual practice looks like on the ground, and make historical and cross-country comparisons difficult.

This paper uses both qualitative and quantitative data to present a multi-dimensional description of dual practice in Kampala, Uganda. After describing the methods used, it proposes a framework to guide the development of an understanding of dual practice and applies it in Kampala, Uganda.

RESEARCH DESIGN AND METHODOLOGY

This study took place in Kampala, Uganda, housing a significant portion of the country's private sector, as well as of the overall health workforce. The researcher selected a mixed methods design to answer the research questions in this paper. Such a design can be responsive to the complexities inherent to dual practice (Creswell and Plano Clark 2011). The mixed methods approach facilitates triangulation (i.e. seeking convergence, corroboration, and correspondence among the different health market system actor); complementarity (i.e. seeking elaboration and illustration); and development (i.e. using results from one method to inform another) (Greene, Caracelli et al. 1989).

A sequential exploratory mixed methods study design was selected because dual practice has not been examined before in Uganda from the perspective of doctors, nurses, health managers, and policy-makers, and, therefore relevant quantitative instruments do not exist study (Creswell and Plano Clark 2011). Furthermore, the qualitative component of the research assisted in identifying new emergent research questions, which cannot be answered with the qualitative data alone and would benefit from a complementary quantitative approach (Creswell and Plano Clark 2011). The flexibility of the exploratory design to allow for an evolution of the underlying philosophical assumptions was another important advantage (Creswell and Plano Clark 2011). Qualitative and quantitative data integration was planned at several points in the design and analysis of this study. First, the qualitative data helped to *develop* the design and content of the self-administered survey. Second, in presenting the findings, the qualitative data was *complemented* by relevant descriptive, quantitative data. Finally, in the discussion, the

findings from the quantitative questionnaire were interpreted in light of the qualitative case studies, for purposes of *triangulation* (Creswell and Plano Clark 2011).

Qualitative component

Case selection and sampling strategy

Uganda's decentralized public health sector is serviced by several types of facilities: National Referral Hospitals and Regional Referral Hospitals, General Hospitals, Health Center IVs, Health Center IIIs, and Health Center IIs (Government of Uganda - Ministry of Health 2010). The case studies included five public sector health facilities, in which health facility leaders and health providers served as embedded units of analysis, supplemented by policy stakeholder interviews. An early hypothesis was that dual practice would vary both between and among facility types. Therefore, a multiple case study design lends itself to the exploration of any variation in dual practice by health facility type. For each case, the researcher selected embedded units of analysis in anticipation that health workers and health managers would have distinct experience and perspectives on dual practice. We purposefully selected five public sector health facilities in Kampala, Uganda to represent the various levels in the Ugandan government health system: Health Center III (2); Health Center IV (2); and a hospital (1). Yin advises that the selection of multiple case studies follows a replication logic, not a sampling logic (Yin 2003). The cases were selected so as to maximize on Yin's recommendations for literal and theoretical replication (Yin 2003). Selecting multiple units that operate at the same health system level allowed for literal replication – where all cases are able to predict similar results, or, are anticipated to build a similar picture of dual practice (i.e. selecting 2 Health Center IV units and 2 Health Center III Units). The hospital was selected to support theoretical replication – illustrating a contrasting, yet anticipated distinct picture of dual practice management as compared to peripheral levels. Within the hospital, various departments were consulted in order to ensure literal replication within this one case. It was assumed that departments within the hospital might

behave similarly, although differences were anticipated depending on the nature of the health services offered and opportunities for dual practice. Table 2 presents a summary of the cases selected for this study.

In addition to the five cases, the researcher also conducted an analysis of policy stakeholders – defined as those stakeholders based within non-facility institutions that were relevant to the regulation of dual practice. These included professional councils, Ministry of Health, Ministry of Public Service, the Medical Bureaus, and the local City Authority – the equivalent of the district health office for the region.

For each case study, participants were selected through purposeful sampling (Miles, Huberman et al. 2013). The sampling for the case studies aimed to include one doctor and one nurse per facility, preferably individuals that had several years of experience in the urban health system. The sampling also intended to include individuals representing the facility leadership (e.g. health facility in-charge or hospital administration representative). Within Health Center III and IV facilities, the sample included the health facility in-charge, as well as a doctor and nurse recommended by the in-charge. Within the hospital, the sampling occurred within each of the five clinical areas by which hospital services are organized, and therefore included the head of the clinical area, as well as a nurse and a doctor recommended by them. Policy stakeholders were selected through purposive sampling. The main criteria guiding the sampling was the extent to which a stakeholder would (1) be knowledgeable about policies on dual practice either on the national level or within their organization; (2) have a stake in the development of a policy on dual practice; and (3) present a unique perspective on dual practice in the Ugandan context.

Data collection instruments and field work

A literature review, informal discussions with providers and policy-makers in Uganda in January 2011, and on-going consultations with local collaborators informed the development of

semi-structured interview guides for each respondent type. These guides included questions about the respondents' experience, dual practice, and policy environment. Interviews with policy-makers focused on the policy-related questions, as well as on the evolution of dual practice in the health system. The interview guide was pre-tested outside of the study area in two interviews in order to identify questions whose wording was difficult for respondents to understand, as well as to gain a sense about whether the respondents would be willing to discuss this topic, which could be considered sensitive by some. The final version of the interview guides can be found in Appendix 1.

Data collection took place during July-August 2012. The interviews were carried out in collaboration with the faculty collaborator from Makerere University School of Public Health and with the support of a local research assistant. Interviews took place in respondents' office or a private area within their place of work. Interviews generally were scheduled between 8 am and 5 pm, by appointment, at times most convenient respondents. All interviews were conducted in English. All but a couple of interviews were digitally recorded. In instances where respondents preferred not to be recorded, detailed notes were maintained.

Data coding and analysis

All of the recordings were transcribed. Most of the transcriptions were completed with the help of two in-country transcribers. In the two instances where respondents preferred that our interview was not recorded, the handwritten notes were typed and included with the other transcripts. Also, where available, the researchers' notes on interview procedures were typed up and included in a labeled section in the corresponding transcript. Atlas.ti 7 was used to facilitate qualitative data management and analysis.

Initial field notes and reading of the transcripts revealed that dual practice patterns did not differ by case. Differences in the profile of dual practice were identified between the health

centers and the hospital and also among the various health providers included in this study. Because of this initial finding, although the data was collected using a case study design, it was analyzed using a framework analysis approach (Ritchie and Spencer 1994; Pope, Ziebland et al. 2000). Framework analysis consists of five major steps: familiarization with the data, the identification of a thematic framework, indexing, charting, and mapping and interpretation (Ritchie and Spencer 1994; Pope, Ziebland et al. 2000). Each of these is explained in greater detail below.

Familiarization: The researcher familiarized herself with the data by reviewing research notes and reflections during data collection. Additionally, she listened to all of the recordings and transcribed about one third of them. Each of the transcripts was read a couple of times before indexing or coding began.

Identification of a thematic framework: A preliminary coding structure was developed based on the initial dimensions that emerged from the literature review, leaving room for new themes and dimensions to emerge from the data. The researcher maintained a memo documenting and justifying how the thematic framework or coding structure evolved during the analysis process.

Indexing: The researcher reviewed the qualitative data twice. In the process the researcher changed, as necessary the coding of the text, in order to ensure the consistent application of coding structure and definitions. This second data iteration helped the researcher to eliminate redundancies and combine codes, as appropriate. The final coding scheme can be found in Appendix 2.

Charting: Tables and matrices were constructed to re-arrange the data and observe emerging themes. Within-case theme analyses, as well as cross case theme analyses were nevertheless conducted, for both health managers and providers, to confirm the existence or

absence of case-specific patterns. Additionally, key quotes were extracted. In the text, respondents are referred to based on their unique id (P1, P2 etc.), and, when relevant, by their affiliation.

Mapping and interpretation: Reviewing the tables and matrices confirmed the importance of the dimensions identified in the literature review and helped to identify additional items to include in the framework proposed in this paper. An initial interpretation of the data was conducted in preparation for the development of the quantitative data collection tools. In addition, the researcher revisited the qualitative data in the interpretation of the quantitative survey findings.

Ensuring trustworthiness

Lincoln and Guba propose that trustworthiness can be described according to four dimensions: credibility, transferability, dependability, and confirmability (Lincoln and Guba 1985). This section describes the steps undertaken to ensure trustworthiness of the qualitative data collection, analysis, and interpretation.

Credibility: The researcher used triangulation to ensure that the description of dual practice in Kampala is comprehensive and rich. Multiple perspectives on dual practice were elicited through the study design, which was based on interviews with a diverse group of actors. Furthermore, the quantitative methods also helped to reinforce the findings from the qualitative research. In addition, the researcher used member-checking techniques, particularly in the transition period between the qualitative and quantitative phases. For example, preliminary findings were shared with key informants before the quantitative data collection took place.

Transferability: The researcher attempted to produce a detailed, thick description of dual practice and the process used to study it. In addition to the data in this paper, additional aspects of dual practice are presented in the other Manuscripts from this thesis. As a dissertation, this

entire document aims to serve as a detailed description of the dual practice phenomenon in Kampala.

Dependability: The researcher ensured dependability of the study by describing in detail the research methods employed. Additionally, through field notes, the researcher documented the procedures involved in study implementation. The researcher and the research assistant who assisted with data collection maintained hand-written notes for each of the interviews. These notes were discussed among members of the research team and informed necessary changes in the interview guides. The notes focused particularly on what questions from the qualitative guide worked, and what questions did not. The notes also contained information to follow-up on, such as media stories, other contacts, and other questions that might be of interest. These two approaches ensure that other researchers could implement the same research plan and could understand the choices made during the course of this study.

Confirmability: The researcher applied a couple approaches to ensure confirmability. First, the researcher maintained an audit trail: a detailed record of the various steps undertaken during the course of the study, the process notes, the data collection instruments (both initial and final version, after the pre-test), and the raw data and transcripts. Second, the researcher recognizes that her own personal preconceptions and perspectives could have influenced the study approach and interpretation of the findings. In order to foster reflexivity, the research project was designed to include multiple investigators who were regularly involved in the field work: the doctoral student, the Makerere University faculty advisor, and the local research assistant. During the course of the project, the researcher and the in-country research assistant discussed the day's data collection before it began, and debriefed at the end of the day, either in person, or by phone. Debriefs with faculty advisors at Hopkins and Makerere happened on a regular, bi-weekly basis. Additionally, the researcher maintained reflexive notes along with the

field notes and analysis memos. Finally, in the manuscript discussion, the researcher reflects on how her preconceptions and assumptions might have affected the research process.

Quantitative component

Survey development

The researcher used the qualitative findings, as well as available surveys on similar topics, to develop a self-administered, paper-based questionnaire, in English. The questionnaire contained three parts: a best-worst object scaling exercise (see Manuscript 3 for detailed analysis), a best-worst scaling profile exercise (see Manuscript 4 for detailed analysis), and demographic and professional characteristics (e.g. individual characteristics, professional practice, dual practice engagement) (data presented Manuscripts 1, 3, and 4). For the purpose of the survey, dual practice was defined as having a second job, in addition to one's government position. A pre-test of this questionnaire was conducted in February 2013 with five individuals: two nurses and three doctors. Filling out the entire questionnaire took about 20 to 25 minutes for all respondents. The final questionnaire can be found in Appendix 3.

Sample population, sample size, and sample selection

The qualitative analysis revealed differences in dual practice not only between doctors and nurses, but also among doctors. Therefore, the study population for this survey included three types of providers: general practitioners, specialists, and nurses within Kampala's public sector HCIIIs and HCIVs, as well as major hospitals. All but two HCIII facilities were included in our sample. Two of the HCIII were excluded because they were occupational health clinics, and therefore had different staffing and patient profile than facilities serving the community.

The sample size was determined according to existing sample size guidelines for the preference elicitation exercises included in the survey (Hensher, Rose et al. 2005). Hensher and colleagues recommend, as a "rule of thumb", a sample of 50 respondents per sub-group when

conducting discrete choice experiments (Hensher, Rose et al. 2005). Therefore, the target sample for this study was 150 health providers from public sector HCIII, HCIV, and government hospitals in the urban area of interest. The target sample included 50 specialist doctors, 50 general practitioners, and 50 nurses.

A team comprised of the doctoral student researcher and three local research assistants implemented the survey. The team had introduction letters from the Makerere University School of Public Health, specifying the purpose of the research, the nature of the request and procedures, and the research approvals that had been obtained.

The health providers were sampled through convenience sampling techniques, using the information about filled norms based on the latest Human Resources Audit as a reference (Ministry of Health 2011). In each facility, the permission was obtained from the health facility in-charge or hospital administration to conduct the survey.

In HCIII and HCIV, health facility in-charges were requested to put the research team in touch with all Nursing Officers and Medical Officers (equivalent of general practitioners) in their facility. After obtaining permission from the in-charge, the research team began contacting the Nursing Officers and Medical Officers and making appointments with them – either the same day or in a subsequent day that week, during regular work hours from 8am to 5pm, Monday through Friday. Generally, surveys were administered through two day-long visits to these health facilities. In all but one of the HCIV facilities, the research team was able to contact almost all of the target providers. In one of the HCIV, the facility in-charge was more reluctant to grant access to the facility and it was markedly difficult for staff to find time to do the survey. After two days at this facility with little health provider participation, the research team decided that it was not possible to implement additional survey there and did not want to violate ethical principles of voluntary participation.

In the two hospitals, hospital administration and/or clinical area leaders were requested to put the research team in touch with Nursing Officers, Medical Officers, and Medical Consultants (equivalent of medical specialists). In the smaller hospital, Nursing Officers, Medical Officers, and Medical Consultants were invited by the hospital administration to a meeting to complete the survey. The research team followed-up with those who were not able to attend the meeting over the course of the subsequent week. In the larger hospital, data collection differed according to the preferences of clinical area or department leaders. In some cases, the leaders invited the research team to be introduced at their regular staff meetings. Some health providers were able to complete the survey immediately after the meetings, while others made appointments with a research team member for a subsequent date and time. In one case, a clinical area leader signed a special introduction letter for the research team to take to each department in that area. In another case, the clinical area leader provided the research team with specific names of people to contact for our survey. In the larger hospital, because it was difficult to identify general practitioners, the clinical area leaders recommended that we administer the survey to medical residents – who were general practitioners in training to become specialists. In these hospitals, not all the surveys were administered in a private setting. However, the research team ensured that, when multiple respondents were completing the survey in the same space, all participants were comfortable with the setting and that they would not discuss the survey amongst themselves. No issues or complaints were brought to the attention of the research team during this process. Data collection within hospitals was competed over several days.

During February-March 2013, the research team visited all the facilities in person and provided respondents with hard copies of the survey to complete. Health providers who were on study or maternity leave were not included in this study, as they could not complete the survey in person. After obtaining written informed consent from each individual, the research team explained the survey instructions to respondents in order to ensure that they understand the tasks

requested of them. A research team member was available during survey administration, should any questions arise from respondents. Therefore, although it was a self-administered survey, the completion rate was very high (almost 100%) because the research team was available to answer any questions.

The research team was able to obtain a larger sample than planned for nurses, but could not find, in the time period available for data collection, sufficient general practitioners and specialists.

Data preparation and analysis

All quantitative data was double entered using EpiData 3.1. The resulting dataset was exported to Stata 11 for further analysis. The researcher produced descriptive characteristics for the entire sample, as well as for each facility type and/or health provider type, as appropriate using Stata. Differences in the proportion of providers who declared dual practice among different health provider groups were calculated using the chi-square test.

Ethical approvals

Ethical approvals were obtained from the Institutional Review Board of the Johns Hopkins Bloomberg School of Public Health (IRB No. 4371), the Makerere University College of Health Sciences - School of Public Health Higher Degrees, Research, and Ethics Committee (IRB No. 11353), the Mulago Research Ethics Committee (Protocol no. 249), and the Uganda National Council for Science and Technology (Ref. No. SS 2883). During the first contact, a recruitment script was used to discuss the study and to make an appointment with the respondent, for a time and location convenient to them (generally, during working hours at the facility). All respondents were guided through an informed consent process, through which research team members explained the minimal, but plausible risks associated with participation in this research project, and were guaranteed anonymity and confidentiality. The respondents were given time to review

the consent form and request further information about the study before signing a written consent form.

FINDINGS

A summary of the cases included in this study, the characteristics of 23 facility-based interview respondents and the 13 policy stakeholders are displayed in Table 3 and Table 4, respectively. Although respondents could not be selected based on their dual practice status, just under half of them declared having additional jobs at the time of the interview. More than half (15/23) declared either having dual practice at the time of the interview or having had dual practice at some point in the past. As shown in Table 3, in one of the HCIII, the facility in-charge connected the research team with the clinical officer when asked to speak to a medical doctor. We decided to include the clinical officer in our study, nevertheless, as s/he would have relevant insights. Additionally, one of the health facilities that was identified as a HCIV in the latest Ugandan MOH Health workforce audit (Ministry of Health 2009), had been upgraded to a regional referral hospital. It was included in the sample and classified as a hospital. The policy stakeholders represented a variety of public and private institutions, as well as professional associations. Although none of the respondents refused to participate in the interview, a couple preferred not to be recorded. All interviews took place at the respondents' place of work, and, in general, the interviews lasted between 45 minutes and 1 hour, depending on how much time respondents could spend away from their work duties.

During the quantitative phase, a total of 128 questionnaires were administered in March 2013 to 70 doctors (31 general practitioners and 39 specialists) and 58 nurses from 2 hospitals, 1 or 2 HCIV, and 6 HCIIIs (see Table 5). None of these respondents refused to take the survey. Although the pre-test estimated that the survey would take less than 30 minutes to complete, some health providers took significantly longer, up to one hour. This is because it was not

possible for them to step away from their service delivery duties for a solid period of time, between 20 and 25 minutes.

A multi-dimensional framework for describing dual practice

Figure 1 illustrates the framework that was developed based on the literature review and the analysis of the data. This framework illustrates various elements at the individual health worker, health facility, and health system level. Acknowledging blurred lines between public and private health systems, these levels are relevant in both. At the broadest level, it is important to understand how dual practice is defined and regulated in a particular context. Furthermore, it is important to understand how dual practice affects service delivery and health system performance, in both the public and private sectors. At the health facility level, working environment in both the public and private sectors, including management strategies, must be described in order to understand its contribution to a health providers' incentives structure. Additionally, how dual practice affects health facility management and performance is another important element to capture. At the individual level, the dimensions illustrated in the framework help to describe what dual practice looks like on the ground in a particular context. For individual health providers in dual practice, it is important to capture who is engaged in dual practice (i.e. which health workers), what types of activities they are involved in, why do they choose to engage in dual practice, and what the effects are on providers.

The remainder of the section uses both qualitative and quantitative data analysis findings to describe dual practice in Kampala, Uganda. Where they are relevant, the researcher highlights differences between the facility types and the cadres explored in our study. The management strategies are described in Manuscript 2. The effects of dual practice on various levels of the health system are detailed further in Manuscript 3. Finally, Manuscript 4 analyzes the policy on dual practice in Uganda and summarizes provider preferences for policy options.

A local definition for dual practice

During the course of the first couple of interviews, it became apparent that multiple definitions of dual practice existed among respondents. The definition of dual practice used in this study was based on the literature: "dual practice or dual employment occurs when public sector health workers also provide health services in the private sector" (see interview guide in Appendix 1).

Among the five cases, differences in respondents' definitions of dual practice were identified. In lower level facilities (Cases A, B, and C), respondents referred to dual practice as *kyeyo,* which is a local term referring to holding a part-time job in addition to one's public employment (UgandaWiki 2007; Omongin 2013). *Kyeyo* represented basically any job outside of the government, whether or not it was in the health sector. In hospitals (Cases D and E), respondents unanimously defined dual practice as health sector activities or activities in the same profession, in addition to government duties. One respondent explained that dual practice:

> *"… Should be in the same profession, you know, in the same line of your profession. That's when it becomes real dual practice. [...] Because, for example, if I'm a doctor here and I work in another hospital as a doctor, that would be dual practice. If I'm a doctor here, then I own a private business like transport, I wouldn't call it dual practice." – Hospital administrator (P8)*

Furthermore, respondents from our hospital cases described several types of health-related activities, in addition to private practice, which could be considered dual practice: research, consulting, and teaching. While minor potential differences between lower-level facilities and hospitals arose, within the five cases, there were no differences between the perspectives of health managers and health workers.

Policy stakeholders consistently agreed that dual practice would refer to a job that is in line with someone's technical training. They recognized that some individuals could engage in non-health activities as well, however, as one policy-maker explained, these would fall under the

"diversification of economic activities" and not dual practice (P27). In addition, they proposed a few additional dimensions when defining dual practice, such as activities happening in a different location than one's main place of employment (P21), formal employment with an appointment letter (P29), activities that require "taking a bit of government time" (P33).

In summary, the additional dimensions relevant to defining dual practice included: whether dual practice activities are in the health sector or not, whether the additional employment was formal or not formal, whether it was full-time or part-time, and whether dual practice interfered with government time, as defined by the Ministry of Public Service's Standing Orders (Government of Uganda - Ministry of Public Service 2010). Most importantly, however, our interviews revealed diverse perceptions about what dual practice entails, and the potential for misunderstandings of existing policies.

Which types of providers engaged in dual practice?

All respondents generally agreed that dual practice was widespread among doctors and nurses. Midwives, clinical officers, laboratory technicians, and other allied health professionals were also believed to have dual practice. Based on the self-administered survey, almost half of our respondents held a second job. Preliminary sub-group analyses show that the proportion of providers engaged in dual practice varied by provider type (see Table 6). Among doctors, almost 60% of general practitioners and over 90% of specialists held a second job. In contrast to our qualitative findings, which proposed that lower level cadres have high mobility and many opportunities for dual practice, only 12% of nurses in our sample reported having a second job. It is possible that nurses were more reluctant to reveal that they had additional jobs, or, that our data collection, which only captured nurses working the morning shifts, failed obtain a representative sample of nurses. Our questionnaire also inquired about providers' third jobs, which appear to be most relevant to specialists (see Table 6). Although the sample was not powered for sub-group

analyses, the low p-values confirm the statistically significant differences among the three provider groups.

What activities do providers engage outside of their government work?

Dual practice activities mentioned by our respondents did not vary by case, but we found distinctions between providers' dual practice at lower level facilities (Cases A, B, and C) and at hospitals (Cases D and E). Based on our interviews, these differences arose from the location of these facilities. Often, HCIII and HCIV serve communities located in more remote parts of the urban area. Hospitals, however, were centrally located, making it easier for providers there to access nearby private sector facilities. One of the hospitals in our sample also had a private wing, where providers could see and obtain fees from private patients.

Dual practice activities differed between doctors and nurses. Based on our interviews, three main factors explained these differences: the supply of health workers, work structure and provider autonomy, and health workforce policies. First, nurses significantly outnumber doctors in Uganda. Due to the high demand placed on few doctors, and the relatively higher costs to hire them, more part-time opportunities exist for doctors than for nurses, in the private sector. One of our respondents explained:

> *"Um, yes, of course, the doctors are fewer in number, meaning that uh there are several health facilities in town, doing business, who may not be able to recruit a full-time professional, but then they would rather engage him for a few hours, and uh, and be able to afford to pay him. [...] For the nurses, yes, some are also engaged in dual practice, but because they are quite many, and uh, cheaper to employ, then uh, even the private practice can easily engage a nurse, on a full-time basis." – Ministry of Health Policy Stakeholder (P33)*

Second, doctors and nurses have different patient interactions, resulting in differences in work structure. In both inpatient and outpatient settings, doctors generally have only one encounter per patient, while nurses might have multiple during the day. Furthermore, doctors

have more autonomy than nurses in their daily work, especially when it comes to setting their schedules (P19, P20, P35). A couple hospital-based nurses explained:

> *"You find out that nurses are the ones who are always on ground working, even in this hospital; nurses are always on the ground. [...] it's easy for the doctors, because they're never; they're never on the ground all the time. They can easily leave their work, then go and do their other jobs" – Hospital, Nurse (P20)*

> *"It's very easy for doctors. [...] reason is doctors work for less hours ... right now a doctor can decide to come at 11, do a round within 2 hours and leave at 1. So the rest of the time, the doctor is free. Maybe we can call on them to come ... which is unlikely for nurses. Nurses work like 24 hours so they work in shifts. Nurse for day duty is supposed to be here from 8, up to 5. So you can imagine this doctor may only work during the day, but the nurses go maybe to work from 5:30 up to ..." – Hospital, Nurse (P35)*

Third, current policies allow doctors and nurses different opportunities in the private sector. While doctors are allowed to open their own private practices, nurses are not. Consequently, nurses' health activities, particular in lower-level facilities, include opening drug-shops or maternity homes. Non-health activities in addition to their government job include: selling clothes/shoes; hardware; phones; baked goods; sewing uniforms; food supplements/cosmetics/lotions; agriculture and farming (e.g. raising chickens).

Interviews with general practitioners and specialists revealed different dual practice opportunities and patterns among doctors, mostly based on supply and the type of services provided. Due to their low supply, Ugandan specialists are in greatest demand and therefore have many dual practice opportunities. These opportunities can vary by the nature of the service provided by these providers. For example, doctors can easily open their own clinics if they need minimal equipment for the services they provide. Specialists who need significant infrastructure and equipment (e.g. surgery; radiology) for their services typically find dual practice opportunities in existing, larger, private institutions or partner with businessmen who have investment capital. Specialists whose services do not require significant infrastructure at all times, but that entail multiple consultations have private practices, but maintain linkages with

both public and private hospitals, to use their facilities when needed (e.g. obstetrics/gynecology). Few specialists have solo practices, as they often cannot work there full-time.

The data collected through the questionnaire confirms these findings. As shown in Table 7, three quarters (76.7%) of all respondents held second jobs providing private health services. This includes the vast majority of doctors. The data is not presented by case or facility type as only two nurses from HCIII declared having dual practice and all other respondents who declared having dual practice were based at one of the hospitals.

Finally, we found that providers first obtain second jobs through both formal and informal approaches. A couple respondents obtained their second jobs by formally applying to them (P12, P14). One of the general practitioner in our sample was connected a private clinic by patients in the public sector, who "saw those good qualities in me and though I would use them for making some extra money" (P13). Such patients typically belong to the working or middle-class and are interested in seeking care in the evenings, after their work is complete (P19). Specialists credited other colleagues for connecting them with second jobs at the clinics that they own or where they currently practice.

Why do providers engage in dual practice?

The literature proposes a variety of financial and non-financial reasons why providers engage in dual practice. Our interview respondents confirmed the importance of the financial incentives to engage in dual practice in Uganda, where public sector salaries are too low. Private sector work can dramatically increase a provider's monthly earnings. For example, in fiscal year 2012/2013 medical officer salaries started at around 1,000,000 (~$400) and could increase up to 1,600,000 (~$640) for Principal Medical Officers (Government of Uganda - Ministry of Public Service FY 2012/2013).

Figure 2 displays the additional income respondents earn through their second job. Most general practitioners earn between 500,000 and 1,000,000 USHS extra per month (~200-400 USD), therefore having the potential to double their monthly government earnings. The majority of specialists earned between 1,000,000 and 5,000,000 USHS per month (~400-2,000 USD), more than doubling their public sector earnings. A few specialists earned much more than that – between 5,000,000 and 10,000,000 or ~2,000-4,000 USD). Most nurses declared earning less than 500,000 USHS per month (~<200USD), although, as previously mentioned, the sample of nurses who declared second jobs was very small.

While most survey respondents proposed that their principal reason for taking on a second job was financial, the qualitative interviews revealed several additional, non-financial motivators for dual practice. These included the mutual skill transfer between the public and private sectors and access to private sector medicines and equipment not otherwise available in government facilities (P2, P8, P14, P15, P18, P35, P36). One of our respondents explains:

> *"Maybe they learn, because there're some, some hospitals, like those who work international, they learn new things. They learn new things, coz things are different. Those who work in private, private are different from here. They have more drugs. The drugs we use here are different from the government, some. Some have got better drugs, procedures are held differently; they can learn." - HCIII In-charge (P2)*

Another important motivator was meeting patient demand, particularly for those who need care after government hours or need access to specialists, as well as those who are able and willing to pay for private sector services (P8, P14, P15, P17, P34, P35).

The reasons to remain in a public sector job were also important. The job security and the pension prospects were two of the main reasons why providers choose to keep their government job. In addition, the opportunity for professional development and the prospect of promotion was only available in the public sector, as private sector jobs typically had fixed term contracts that did not include long-term career pathways. A few respondents based in one of the hospitals in our study also cited research opportunities as one of the reasons why the public sector

job was important to them. The private sector in Uganda generally does not have the same linkages with research institutions to allow providers to engage in both service provision and research.

Among doctors, in particular, the "address" of the government facility was important. Being affiliated with a government facility provided doctors with the prestige of having been selected for the public service and also with the opportunity, especially for specialist doctors, to use government facilities and equipment for some of their private patients.

How much time do government providers spend on dual practice?

The survey asked providers about their time in their government position and also about their time in their second job. All of our respondents were employed full-time at the government facility, yet quite a large proportion of survey respondents, particularly nurses and general practitioners worked more than 40 hours per week. Specialist doctors, whom we found only in hospital settings, worked the fewest number of hours in the public sector. Half of them (53.8%) worked less than 35 hours per week (see Figure 3). This confirms what interview respondents proposed – that senior specialists, or consultants, tend to come in for a few hours only and then perhaps tend to other business, such as dual practice.

In their second jobs, most doctors worked between 11-20 hours/week while most nurses reported working, in general, less than 10 hours/week in addition to their government job. There are a few providers who reported working more than 31 hours per week. These were either specialists, who work less during government hours, or they were general practitioners who were known, from the qualitative interviews, to take on long hours on the weekend or on-call duties (see Figure 4). General practitioners also typically spent 5 hours or less per day in dual practice, however, a couple respondents reported longer shifts, 8-12 hours per day. Specialist doctors reported spending 3-5 hours in their second jobs daily (see Figure 5).

What are the perceived effects of dual practice?

The qualitative interviews revealed that respondents perceived both positive and negative effects of dual practice on the health system. These individual, facility, and system level effects did not differ by facility type. At the individual level, the positive effects reflect the motivation behind providers' decision to take on dual practice, such as improving their income and having access to additional learning opportunities in the private sector, while being able to maintain the job security, prestige, and career path available through the public sector job. Respondents also proposed negative effects of dual practice on the providers themselves, mainly due to stress, fatigue, and burn-out (P2, P3, P8, P9, P10, P14, P15, P18, P19, P20, P21, P23, P32, P35). At the facility level, no positive consequences of dual practice were reported. Negative effects which our respondents mentioned were related to service quality, and access. Specifically, these effects most often included absenteeism, contribution to long waiting times in the public sector, underperforming in the government job, and at times pilfering government supplies (P1, P2, P6, P7, P9, P14, P16, P18, P20, 23, P27). More broadly, at the system level, some positive effects of dual practice were the creation of skill transfer opportunities (P2, P8, P14, P15, P18, P35, P36), meeting patient demand (P8, P14, P15, P17, P34, P35), as well as reducing brain drain (P7, P33). One of the interview respondents explained:

> *"Benefits, you see, the people I think have stayed in the country are, probably it is because of this dual practice. Yah, some would've gone away. Because, for example the salaries they get in government. It may not, for some people it may not even pay rent. Yah, so, how does that person stay in the country? But with these supplements from consultancies, you know private practice and so on, they, they're able to stay. Yah, so it's something that has to be looked at more seriously." (P7 – Health manager, Hospital)*

DISCUSSION

Dual practice is an important issue in LMIC health systems, although it has only rarely been empirically documented (Kiwanuka, Rutebemberwa et al. 2011; Kiwanuka, Rutebemberwa

et al. 2011; Socha and Bech 2011; Hipgrave and Hort 2013). This study contributes to the literature by proposing a framework to guide the development of a multi-dimensional description of dual practice and by using it to understand dual practice in Kampala, Uganda. In examining the profile of dual practice in Kampala, several important themes emerged.

First, the absence of consensus on how to define dual practice, contributed to confusion among providers, health managers, and policy-makers about where to draw boundaries between what is acceptable and what is not acceptable in provider behavior. Dual practice activities differ in their formality and in the extent to which they conflict with a provider's public sector duties. For example, the provision of health services in the private sector was reported to include formal arrangements, which involve an appointment letter, and also informal arrangements, which were more sporadic. The level of conflict with government duties varied between dual practice activities that were health-related and those that were not health related, and was higher in the former. Furthermore, defining dual practice is complicated by the fact that the nature of dual practice in Uganda is diverse. Key differences emerged between doctors and nurses, and also among doctors.

A local definition of dual practice should be specific and clear. Furthermore, it should be flexible enough to tailor to the needs of various types of providers. Based on the current research, dual practice could be potentially defined as: any part-time, private health practice activities that health workers engage in that are in conflict with their full-time, 40 hour/week government job duties. This definition does not concern income diversification through farming or trade activities, but focuses on activities that are, generally, in the same line of professional training as the primary government job. The proposed definition also clearly defines a health workers' commitment to the government job. Better mechanisms should be put in place so as to reduce the likelihood that a health worker could hold two full-time jobs at the same time. This could be similar to the system that was put in place to ensure that a government worker could not hold receive two government salaries. Furthermore, this definition could be further refined to focus

not on hours worked, but on health worker performance. However, this would require broader changes in supervision and health worker remuneration. Finally, whatever a local definition includes, there should be a process for reaching consensus on it among key actors – both providers and policy-makers.

Second, the findings revealed that dual practice is widespread, although the quantitative prevalence estimates should be interpreted with caution. Qualitative interviews proposed that almost all health workers – both doctors and nurses – had dual practice. The survey findings confirmed this for specialist doctors. The prevalence of dual practice among specialists is probably a fair estimate, as it confirms interview respondent perceptions, and the research team was able to reach a high proportion of all specialists working in these government facilities (70% of all specialists in these facilities, according to the latest Human Resources for Health Audit (Ministry of Health 2011)). The prevalence of dual practice among general practitioners was likely an underestimate, because many of the general practitioners respondents were resident doctors, who probably have less time to engage in private sector activities than other medical officers. In contrast to what was expected based on the qualitative findings, only a small percentage of nurses declared a second job. This could be because our sampling technique did not capture nurses who are engaged in dual practice activities during the day, and work in government facilities during the evening or night shift. Alternatively, it could be lower than expected because nurses were more reluctant to declare their dual practice activities. For these reasons, the prevalence of dual practice among nurses was probably underestimated.

Finally, this study reinforces the importance of examining dual practice for both physicians and non-physicians and comparing patterns in their dual practice characteristics and coping strategies. It also shows the benefits of systematically covering various measures of dual practice, such as a provider's level of effort or the income derived from additional jobs, and being able to compare those with the government job equivalents. Having evidence allows for a better understanding of the relationship between public and private, financial and non-financial

incentives for government health workers. Most importantly, data generated from studies such as this one help to steer policy discussions away from anecdotal evidence and individual perceptions. Policies based on anecdotal evidence about dual practice risk ineffectiveness and the creation of unintended consequences in the system. Further insights into policy options and provider preferences for these are presented in detail in Manuscript 4.

STRENGTHS, LIMITATIONS, AND FUTURE RESEARCH

The mixed methods helped to develop a multi-dimensional description of dual practice in Uganda and contributed more than either qualitative or quantitative methods would be able to alone. The researcher underwent systematic steps in design, data collection, and analysis to ensure trustworthiness of the qualitative component. Triangulating our findings from the in-depth interviews across multiple provider types, as well as across the qualitative and quantitative data sources helped to establish the credibility of this study. Exploring dual practice from multiple stakeholders' perspectives brought forth unique perspectives and highlighted the value of studying this phenomenon through multiple lenses, and allowed for additional perspectives to emerge (e.g. general practitioners and specialists). Conducting many of the interviews alongside a local researcher helped to build rapport with respondents and instill trust in our discussion. Respondents provided our team with candid answers, many of them declared their own current and past involvement in dual practice, and supported their perspectives on dual practice with personal anecdotes. The doctoral researcher's position as a non-Ugandan researcher with a non-medical background generally helped to make respondents comfortable in sharing their perspectives on dual practice, and many respondents appeared to use the interview as an opportunity to vent their grievances with the current situation in Kampala. Rather than being suspicious of the research, respondents were generally at ease and curious, and trusting in the confidentiality and anonymity outlined in the consent forms. Many respondents wanted to be

contacted again with the findings and seemed appreciative of this when some of them were approached during the quantitative phase of the data collection.

The researcher implemented various techniques to ensure validity of the quantitative research component. In order to ensure that the research questions were understood by respondents, the instrument was pre-tested with several individuals, similar to the sample population. For example, the research team ensured high rates of survey completion, with minimal missing data. Furthermore, to eliminate data entry errors, the data was double entered using a program that allowed for data entry checks (e.g. pre-specified range of answers). Although the sample size for this study was small, for the sub-group analyses of key characteristics, the differences among the various groups of respondents were statistically significant. The findings from the survey analysis were interpreted in conjunction with the qualitative data, allowing for triangulation and confirmation of findings.

The findings of this study should nevertheless be interpreted with caution, due to some of the limitations that could not be overcome in the study design and data analysis. For example, this study was conducted, by design, in an urban setting. Although Kampala houses a large proportion of Uganda's private health sector, it is unclear to what extent the findings would be generalizable to rural areas or even to urban areas where the private sector is different. Furthermore, the study was designed from the public sector perspective, and therefore, was not able to systematically capture private sector perspectives. The study was not able to include the perspectives of patients and community members on dual practice and its effects on service delivery, although we acknowledge that understanding these would be important.

In a couple of instances, the researcher felt that respondents were uncomfortable talking about dual practice or that respondents were not honest. In the former situation, the local research assistants helped to build rapport and ensure that respondents understood confidentiality, anonymity, and the neutral nature of our questions. In the latter situation, the researcher

suspected dishonesty when, within a facility, a facility in-charge would describe a situation differently than other health workers at that facility or than other in-charges from other facilities. While it was something noted in the analysis memos, it likely did not have a significant impact on the interpretation of the findings. While there were several steps undertaken to ensure trustworthiness of the data, as an outsider with only a short-term presence in the country, the researcher was also limited in her ability to thoroughly establish the credibility of qualitative findings through iterative approaches, such as repeat interviews or systematic member checking.

Some threats to validity arise from the sampling approach for the questionnaire. The sample for the questionnaire was relatively small and random sampling could not be completed. Although the researcher tried to minimize bias, selection bias cannot be avoided through convenience sampling and also through the research teams' inability to sample health providers who worked outside of the day shift. The selection bias is particularly relevant to the characteristics of dual practice, such as prevalence. The reliability of the survey instruments was not possible to determine, since repeated administration was not possible and there were minimal internal consistency checks.

Future research should include systematic exploration of the demand side, as well as of the private sector perspective on dual practice. Additionally, it would be interesting to apply these tools to a different context – either rural areas, urban areas with different private sector sizes, or another country – to determine whether this approach to study dual practice is relevant in different contexts, and also the degree to which the findings are generalizable. In systems where gender plays a role in the workforce, it would be useful to reflect on dual practice through a gender lens. Developing the evidence base on dual practice could also allow for the development and validation of indicators and variables to be used in economic models and simulations of dual practice (Gonzalez and Macho-Stadler 2013; Hipgrave and Hort 2013). The framework we propose opens the door for a deeper exploration of dual practice in Uganda – for example in rural areas or incorporating supply and demand side perspectives – as well as additional analyses of

dual practice in other settings. Even if in-depth studies on dual practice, such as this one, are not possible, it might be feasible to incorporate similar questions in health workforce surveys, studies about absenteeism, or broader health system surveys with a health workforce component.

POLICY IMPLICATIONS

The results presented in this paper are relevant for policy in Uganda and other LMIC countries where dual practice is widespread. Specifically, our findings call for the development of a local policy on dual practice in Uganda – based on the data collected in Kampala and also from data about rural manifestations of dual practice. In Uganda, but also in other settings, the present study supports the recommendation that policy makers should acknowledge the heterogeneity in dual practice among provider types and also around the activities that occur as part of dual practice. Additionally, this exploratory study points to the need for evidence on prevalence and effects on services, and a more systematic exploration of the relative role of incentives from providers' public and private practices. These dual practice parameters are important to consider not just at the country level, but also at the regional level, particularly in areas with free movement of labor.

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TABLE 1: SUMMARY OF COUNTRY DATA FROM LITERATURE ON DUAL PRACTICE HOURS AND EARNINGS

Country	Provider type	Dual practice			Public sector Avg. hrs./week	Reference
		Avg. hrs./ day	Avg. hrs./ week	Income		
Bangladesh	Doctors	2.7	15	n/a	n/a	(Gruen, Anwar et al. 2002)
Vietnam	Doctors	n/a	15	90% of govt. salary	43	(Vujicic, Shengelia et al. 2011)
Thailand	Doctors	n/a	18	2x govt. salary	21-23	(Prakongsai 2005)
Portugal	Nurses	n/a	9-15	n/a	n/a	(Ferrinho, Biscaia et al. 2007)
China	Doctors	n/a	n/a	1/2x govt. salary	n/a	(Bian, Sun et al. 2003).
United Kingdom	Doctors	n/a	n/a	3x govt. salary	n/a	(Humphrey and Russell 2004)

TABLE 2: SUMMARY OF SELECTED CASES

Facility type	**Case A**	**Case B**	**Case C**	**Case D**	**Case E**
Health Center III*	X	X			
Health Center IV			X	X	
Hospital					X
Location					
Central		X		X	X
Periphery	X		X		
Staff composition					
General practitioners			X	X	X
Specialists					X
Nurses	X	X	X	X	X
Filled positions	**142%**	**126%**	**92%**	**137%**	**87%**

Source: Ministry of Health – Human resources for health audit 2011(Ministry of Health 2011)
*Note: Health Center III units are supposed to be staffed by Clinical Officers and Nurses – although sometimes units do have a Medical officer as well.

TABLE 3: QUALITATIVE DATA – HEALTH FACILITY RESPONDENT CHARACTERISTICS

Facility-based respondents							
		Case A n=3	**Case B n=3**	**Case C n=3**	**Case D n=3**	**Case E[1] n=11**	**Number (%)**
Gender	Male	0	1	1	2	4	8 (35%)
	Female	3	2	2	1	7	15 (65%)
Years in service	<10	1	1	1	0	0	3 (13%)
	10-19	0	1	1	0	5	7 (30%)
	20-29	2	0	1	1	2	6 (26%)
	30+	0	1	0	2	3	6 (26%)
Profession	Nurse	2	2	2	1	2	9 (39%)
	General practitioner	0	1	1	0	0	2 (9%)
	Clinical officer	1	0	0	0	0	1 (4%)
	Specialist	0	0	0	2	9	11 (48%)
Dual practice	Yes						10 (43%)
TOTAL							**23**

[1] Years in service not available for one of the respondents at this facility

TABLE 4: POLICY STAKEHOLDER CHARACTERISTICS

Policy stakeholders		**Number (%)**
Gender	**Male**	12 (92%)
	Female	1 (8%)
Sector	**Public/government**	5 (38%)
	Professional associations	4 (31%)
	Private for-profit	3 (23%)
	Private not-for-profit	1 (8%)
TOTAL		**13**

TABLE 5: SUMMARY AND CHARACTERISTICS OF QUESTIONNAIRE RESPONDENTS

Health facility	Overall n=128 Nr. (%)	HC IIIs Nurses n= 26 Nr. (%)	HC IVs Nurses n= 6 Nr. (%)	Hospitals General practitioners n= 31 Nr. (%)	Specialists n= 39 Nr. (%)	Nurses n= 26 Nr. (%)
Age (years)*						
<30	10 (7.8)	1 (3.8)	0	7 (22.6)	0 (0.0)	2 (7.7)
30-39	54 (42.2)	9 (34.6)	1 (16.7)	24 (77.4)	10 (25.6)	10 (38.5)
40-49	36 (28.1)	11 (42.3)	3 (50.0)	0	17 (43.6)	5 (19.2)
50+	28 (21.9)	5 (19.2)	2 (33.3)	0	12 (30.8)	9 (34.6)
Sex*						
Male	46 (35.9)	0	0	19 (61.3)	25 (64.1)	2 (7.7)
Female	82 (64.1)	26 (100.0)	6 (100.0)	12 (38.7)	14 (35.9)	24 (92.3)
Years at facility*						
1-4	82 (64.1)	25 (96.2)	6 (100.0)	25 (80.7)	10 (25.6)	16 (61.5)
5-9	11 (8.6)	0	0	4 (12.9)	6 (15.4)	1 (3.9)
10-19	22 (17.2)	0	0	0	16 (41.0)	6 (23.1)
20+	13 (10.2)	1 (3.8)	0	2 (6.45)	7 (18.0)	3 (11.5)

Notes:
*0 missing

TABLE 6: PREVALENCE OF DUAL PRACTICE ACCORDING TO QUESTIONNAIRE RESPONDENTS

	Overall **n=128** % (95% CI)	**General practitioners** **n= 31** % (95% CI)	**Specialists** **n= 39** % (95% CI)	**Nurses** **n=58** % (95% CI)	**p-value****
Proportion holding 2nd job*	47.6 (38.8, 56.5)	58.6 (39.5, 77.7)	92.3 (83.5, 100.00)	12.1 (3.4, 20.7)	0.000
Proportion holding 3rd job*	10.2 (0.05, 15.7)	6.9 (0, 16.7)	25.6 (11.3, 39.9)	1.7 (0, 5.2)	0.001

Notes:

*2 missing

** A chi-squared test produced p-values for differences in proportions between cadres

TABLE 7: SUMMARY OF ACTIVITIES DECLARED BY PROVIDERS WITH SECOND JOB, IN DESCENDING ORDER

2nd job dual practice activities	**Total** Nr. (%)	**General practitioners** Nr. (%)	**Specialists** Nr. (%)	**Nurses** Nr. (%)
Private health services	46 (76.7)	13 (76.5)	31 (86.1)	2 (28.6)
Agriculture	6 (10.0)	2 (11.8)	2 (5.6)	2 (28.6)
Trade	5 (8.3)	2 (11.8)	1 (2.8)	2 (28.6)
Other	2 (3.3)	0	1 (2.8)	1 (14.3)
Govt. health services	1 (1.7)	0	1 (2.8)	0
TOTAL	**60**	**17**	**36**	**9**

FIGURE 1: FRAMEWORK FOR DESCRIBING THE MULTIPLE DIMENSIONS OF DUAL PRACTICE

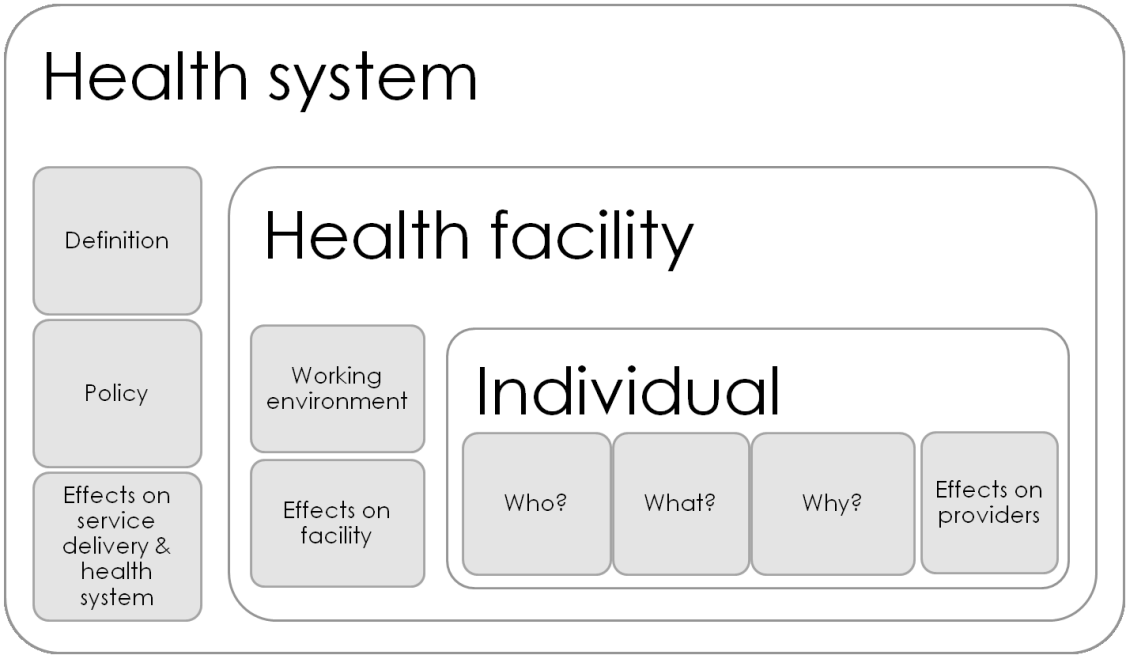


FIGURE 2: SUMMARY OF MONTHLY EARNINGS (USHS) FROM 2ND JOB, BY PROVIDER TYPE

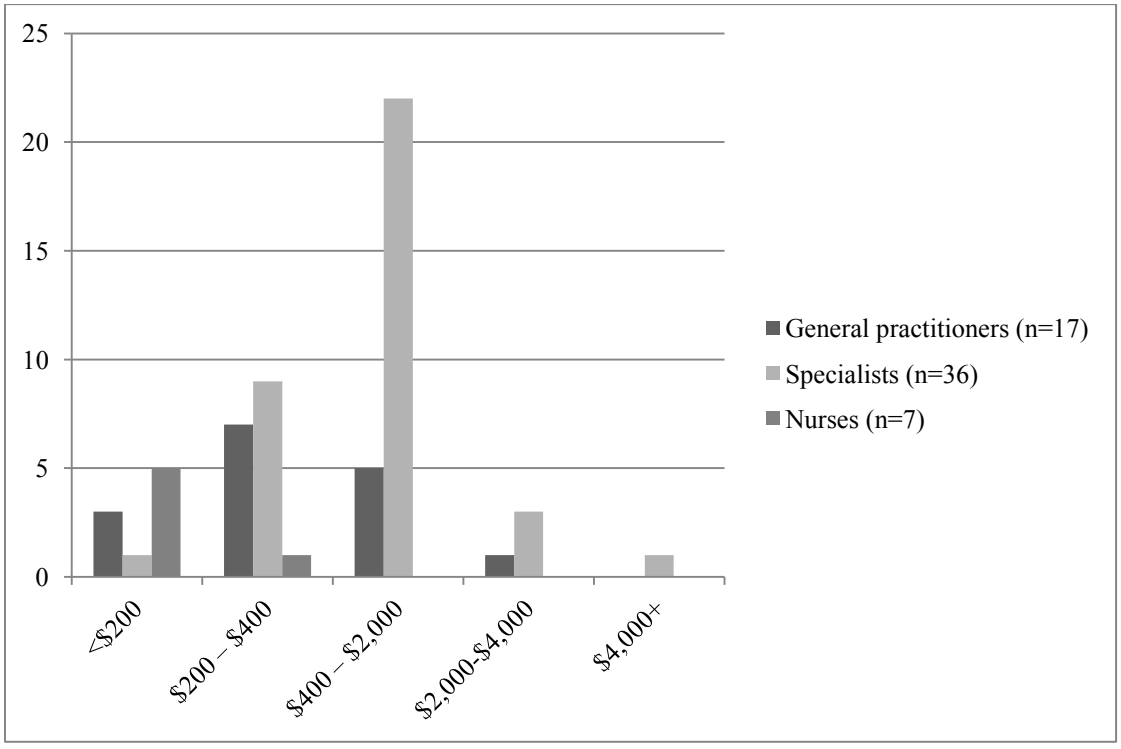


FIGURE 3: SUMMARY OF HOURS PER WEEK SPENT AT GOVERNMENT JOB, BY PROVIDER TYPE

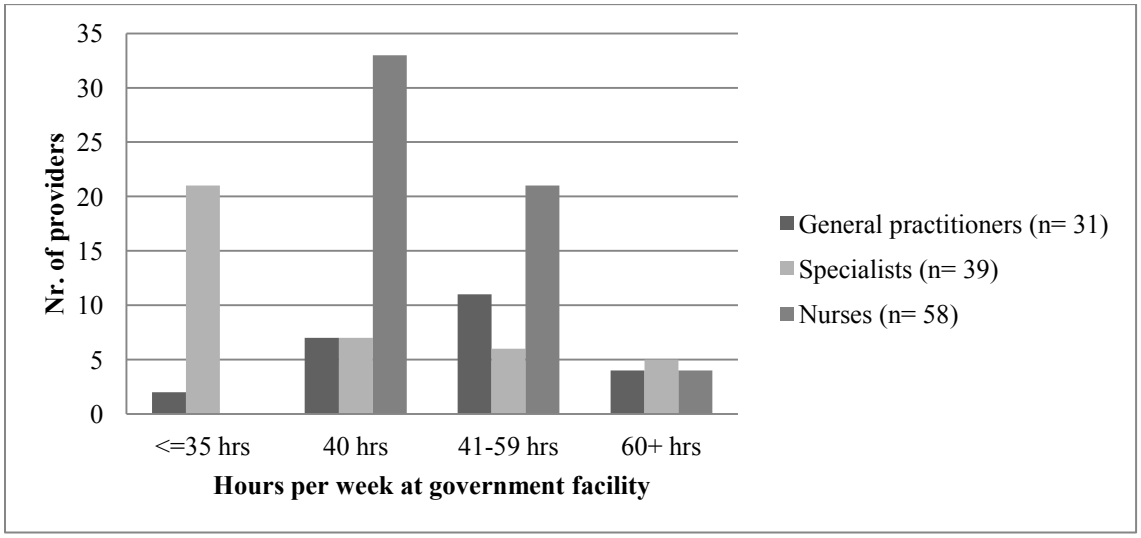


FIGURE 4: SUMMARY OF HOURS PER WEEK SPENT AT SECOND JOB, AMONG PROVIDERS WHO DECLARED SECOND JOB

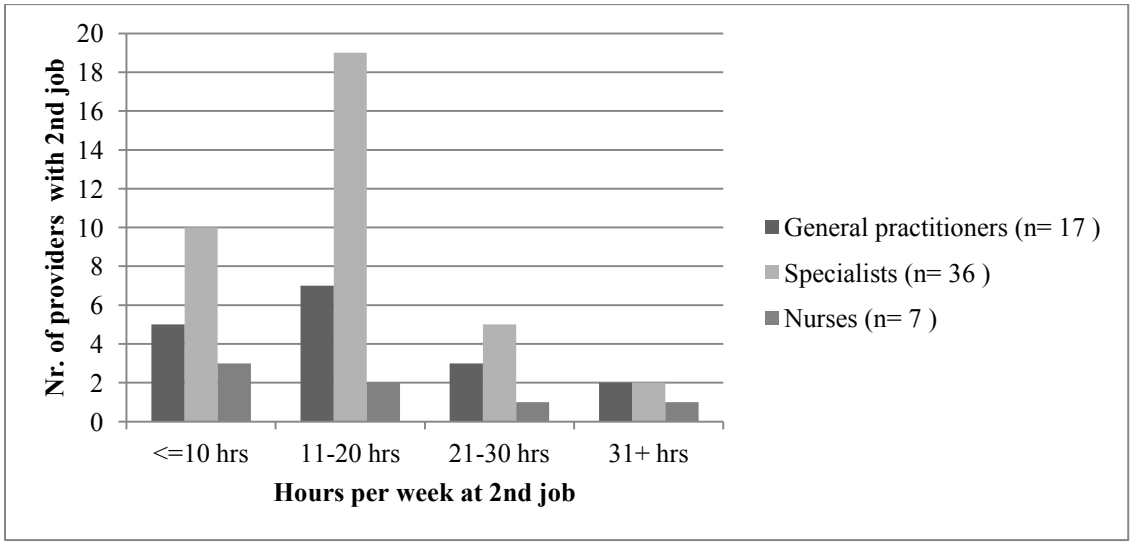
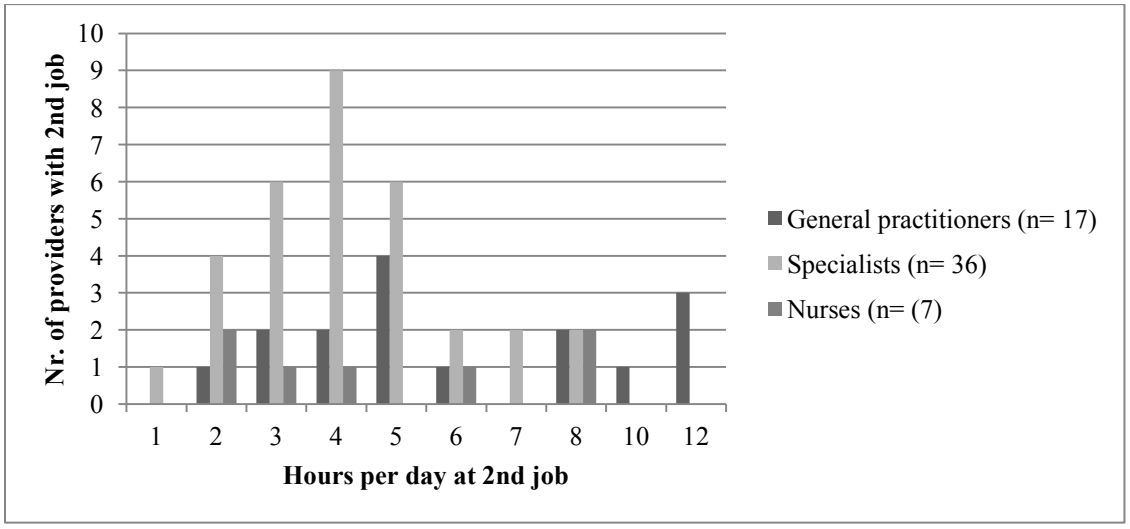


FIGURE 5: SUMMARY OF AVERAGE HOURS PER DAY SPENT AT SECOND JOB, AMONG PROVIDERS WHO DECLARED SECOND JOB



CHAPTER 3: AN EXPLORATION OF DUAL PRACTICE IN KAMPALA, UGANDA THROUGH A COMPLEX ADAPTIVE SYSTEM LENS (MANUSCRIPT 2)

ABSTRACT

Introduction: Many full-time Ugandan government health providers take on additional jobs – a phenomenon called dual practice. We describe the complex patterns that characterize the evolution of dual practice in Uganda and the local management practices that emerged, in response, in some government facilities. An in-depth understanding of dual practice can contribute to policy discussions on improving public sector performance.

Methods: A multiple case study design with embedded units of analysis was supplemented by interviews with policy stakeholders and a document review. Five public sector facility case studies captured the perspective of doctors, nurses, and health managers through semi-structured in-depth interviews. A causal loop diagram illustrated interactions and feedback between old and new actors, as well as emerging roles and relationships.

Results: The causal loop diagram illustrated how feedback related to dual practice policy developed in Uganda. As opportunities for dual practice grew and the public health system declined over time, government providers increasingly coped through dual practice. Over time, government restrictions to dual practice triggered policy resistance and protest from government providers. Resulting feedback contributed to compromising the supply of government providers and potentially service delivery outcomes. Informal government policies and restrictions replaced the formal restrictions identified in the early phases. In some instances, government health managers, particularly those in hospitals, developed their own practices to cope with dual practice and to maintain public sector performance. Their management practices varied according to the health manager's attitude towards dual practice and personal experience with dual practice. These practices were distinct in hospitals. Hospitals needed to regulate internal dual practice opportunities, such as those created by externally-funded research projects based

within facilities. Private wings' inefficiencies and strict fee schedule made them undesirable to providers.

Discussion: Local management practices for dual practice have not been previously documented and provide learning opportunities to inform policy discussions. Dual practice prevails because public and private sector incentives, non-financial and financial, respectively, are complementary. Understanding how dual practice evolves and how it is managed locally is essential for health workforce policy, planning, and performance discussions in Uganda and similar settings.

INTRODUCTION:

Dual practice, when health workers employed full time by the government also provide services privately, is widespread in developing countries, particularly those with growing private sectors. Recent studies found that over one third of physicians in Vietnam, 40% in Sri Lanka and Zimbabwe, one third in Cote d'Ivoire, and as high as 80% in Indonesia and Bangladesh held second jobs (Chomitz, Setiadi et al. 1998; Gruen, Anwar et al. 2002; Berman and Cuizon 2004; Gupta and Dal Poz 2009; Vujicic, Shengelia et al. 2011). Researchers and policy-makers in developing countries display increasing interest in how dual practice affects the health system (Asiimwe 2008; Ranson, Chopra et al. 2010).

Uganda is one of these countries. In 2005, a nationally representative survey of private health facilities found that more than half (54%) of private sector doctors also worked in the public sector (Mandelli, Kyomuhangi et al. 2005). While estimates from public facilities or for non-physician health cadres do not exist, in general, local stakeholders perceive that almost all government providers have dual practice. A recent study aiming to establish policy-makers' research priorities revealed that one of their principal concerns was dual practice, "reported to greatly affect the performance of the public sector. The dual [practice] of public health workers has implications on quality and management of health care delivery such as indiscipline, time loss and poor work ethics" (Asiimwe 2008). However, little is known about dual practice in Uganda and elsewhere.

The available literature examines dual practice rather narrowly, generally only from the perspective of physicians. Furthermore, existing studies provide few answers to questions related to the policy and management of dual practice, beyond agreement that the effects of dual practice on the organization of the health system and service delivery can be either positive or negative and that these effects, and related policy responses, are highly dependent on the local context (Ferrinho, Lerberghe et al. 2004; Kiwanuka, Rutebemberwa et al. 2011; Socha and Bech 2011).

For example, if well managed, dual practice may help to prevent doctors from leaving the country by enabling them to supplement salaries without necessarily adversely affecting quality of care. Conversely, if poorly managed, absenteeism and pilfering may negatively affect public sector standards of care and contribute to inefficiencies. The factors and interactions that drive these effects have not been explored extensively. Presumably, these factors depend on how dual practice has evolved and how it is currently managed in a particular health system.

Studying the dynamic aspects of dual practice and related interactions both within and outside the boundaries of a health system requires a departure from the linear, theoretical models found in the literature (Berman and Cuizon 2004; Gonzalez 2004; Eggleston and Bir 2006; Biglaiser and Ma 2007; Gonzalez and Macho-Stadler 2013). A more appropriate model acknowledges the holistic, complex, and adaptive nature of health systems and their broader environment. Complex systems are composed of many interacting components that organize themselves in dynamic ways, are unpredictable in the long-term, and are able to retain learning from the past (Tan, Wen et al. 2005; Paina and Peters 2011; Adam and de Savigny 2012). A research design acknowledging such system features guides the exploration of phenomena such as dual practice from multiple perspectives, acknowledges that the boundaries of the system of interest can transcend those of the health system, and facilitates the exploration of complex system characteristics, such as feedback, emergence, and self-organization.

In this paper, we explore how dual practice evolved and how it is currently managed in the Ugandan health system, in an urban, complex health system, with an active private sector. We use a document and policy review, as well as qualitative case studies and policy stakeholder interviews, to illustrate the role of dual practice and the key patterns and interactions that it motivated in the health system. Understanding dual practice holistically in the Ugandan context provides a platform for explore potential policy options. Gaining an in-depth understanding of the role of dual practice at various levels of the system can help policy-makers and health managers develop rules to optimize managing dual practice and its consequences.

METHODS:

RESEARCH DESIGN

This paper uses a sub-set of data that were collected as part of a sequential, exploratory mixed methods study (see Manuscript 1 for a detailed description). Specifically, this paper presents qualitative data collected through a multiple case study design of public sector facilities, with embedded units of analysis (health providers and managers), supplemented by an exploration of the perspectives of public and private policy stakeholders and a document review.

A multiple case study design with embedded units of analysis lends itself to the exploration of various perspectives as to whether informal management polices emerged, as well as of any differences in dual practice management approaches. Additionally, although it was not part of the initial study design, interviews with policy-makers revealed that examining the history of dual practice in Uganda and the evolution of dual practice policies might be useful for understanding the current policy situation. Based on discussions with policy-makers and case study respondents, as well as available historical accounts, we developed a causal loop diagram (CLD), a qualitative systems dynamics method. The CLD illustrates the events, actors, and interactions that fostered the emergence of dual practice policy responses over time in the Ugandan health system. It also displays the resulting complex system patterns and characteristics, such as policy resistance, feedback, and adaptation (Forrester 1961; Sterman 2006).

Case selection and sampling strategy

We purposefully selected five public sector health facilities in Kampala, Uganda to represent the various levels in the Ugandan government health system: Health Center III (2); Health Center IV (1); and two hospitals – a national referral hospital and a regional referral hospital (see Table 1 for case characteristics). Health Center III facilities have a general outpatient clinic and a maternity ward. Health Center IV is a larger facility than the Health

Center III, with the capacity for inpatient services and some emergency operations. Regional referral hospitals have specialized clinics, and are staffed by a variety of cadres, including medical specialists. The national referral hospital is the largest and most diverse facility type, which has academic (teaching and research) responsibilities, in addition to medical service provision. Within these case studies, individual respondents were purposefully selected to ensure that, at each facility, the perspectives of providers (doctors and nurses) and the facility manager were captured (Miles, Huberman et al. 2013). At each facility, the study sample included the health facility manager (in-charge in health centers, directors or department heads at hospitals), as well as a doctor and nurse recommended by the health facility manager based on their availability and also their experience at the facility. Within the larger hospital, the sampling occurred at the level of the clinical area[2], and therefore included multiple manager-level respondents, as well as a nurse and a doctor recommended by each of them, within their clinical area. Within the smaller hospital, the sample included the director and two providers recommended by them.

Policy stakeholders included purposefully selected individuals from professional councils, relevant government ministries, private not-for-profit medical bureaus, private sector hospital administration, and the local district health office. The main criteria guiding the sampling was the extent to which a stakeholder would be knowledgeable about policies on dual practice either on the national level or within their organization; have a stake in the development of a policy on dual practice; and present a unique perspective on dual practice in the Ugandan context.

DATA COLLECTION INSTRUMENTS AND FIELD WORK

A document and policy review was undertaken before the data collection, and as documents or policies became available. The main areas of interest were the existence and

[2] In the larger hospital in our study, a clinical area is a broad organizational structure, comprised of multiple departments.

content of policies, actors, and events that played a role in the evolution of dual practice in Uganda.

The interview guides contained questions about the evolution of dual practice in Uganda, providers' motivation to engage in dual practice, advantages and disadvantages or challenges linked to dual practice, facility-level policies and management approaches, and potential policy recommendations. Interviews with policy stakeholders focused on policy related questions, as well as on the evolution of dual practice in the health system. Data collection took place during July-August 2012. The interviews were conducted in English. Interviews were recorded, unless respondents preferred otherwise, in which case the researchers took detailed notes.

DATA ANALYSIS

All of the recordings were transcribed and stored in Atlas.ti ver. 7. A preliminary, exploratory coding structure was constructed based initial readings of the transcripts and on the conceptual framework derived from a health market systems approach and the theories of systems thinking and health worker motivation (Franco, Bennett et al. 2002; Tan, Wen et al. 2005; Bloom, Champion et al. 2009; Paina and Peters 2011; Adam and de Savigny 2012). Multiple rounds of coding focused on simplifying the scheme by eliminating redundancies and combining codes, as appropriate (Saldaña 2009). During coding and analysis, memos were developed to capture changes in the coding structure, as well as emerging reflections.

Text query results from Atlas.ti were arranged in matrices for within and cross-case analyses, according to the methods suggested by Miles and Huberman (Miles, Huberman et al. 2013). For each case, matrices were developed by theme (e.g. informal organizational policies), with focus on the embedded units of analysis (e.g. summarizing and contrasting the perspectives of health facility managers, doctors, and nurses). Cross-case theme analyses focused on exploring the differences and similarities between the five cases, specifically by health facility type (e.g. HCIII, HCIV, and Hospital – with distinctions made, when relevant, between the

smaller hospital and the larger hospital). The policy stakeholder interviews were analyzed for emerging themes, along the same lines as the case studies. References to the analysis and any quotes are labeled according by document number (e.g. P5), in order to maintain anonymity of respondents. Additional details about the design, collection, and analysis of the qualitative data, including information about data quality, are presented in Manuscript 1.

CAUSAL LOOP DIAGRAM DEVELOPMENT

The causal loop diagram (CLD) facilitates the visualization of dynamic complexity in a system, and often represents a precursor step to developing a system dynamic model (Forrester 1961; Sterman 2006). In its qualitative form, it is an illustration of the underlying mental model, which can be helpful for describing phenomena with complex characteristics and policy resistance (Sterman 2006). The initial study design for this project did not include the exploration of how dual practice evolved in Uganda or development of a CLD. The potential relevance of the CLD arose from the analysis of the qualitative interview data, where respondents revealed that the role of dual practice and the government policy on dual practice changed over time. The CLD was selected to illustrate dynamic interactions in the system and to identify short and long-term influences that government policy could have on the health workforce.

The CLD for this study was developed after the qualitative data analysis was complete, using Vensim PLE (Vensim Personal Learning Edition 2012). The factors influencing dual practice arose from the qualitative data. It was challenging to recreate the history of dual practice, particularly in the distant past. An account of the medical profession in East Africa, which included details about the emergence and development of dual practice and the private sector from the perspective of physicians, helped to identify relevant early events from the 1960s and the 1970s (Iliffe 1998). Recent events have been identified from the in-depth interviews conducted for this study. The CLD was refined through various iterations, to ensure that the relationships, interactions, and direction of feedback were correctly specified.

We used standard CLD notation: "a positive (+) arrow from variable A to variable B means that *A adds to B*, or, *a change in A causes a change in B in the same direction"*; a negative (-) arrow from A to B means that "*A subtracts from B*, or, *a change in A causes a change in B in the opposite direction"* (Richardson 1997). Some of the relationships create feedback loops. These loops are reinforcing if the variables influence each other in the same direction. Loops are balancing if they influence each other in different directions. The thickness of the line denotes the size of the effect, and this is particularly relevant in relation to the intensity of government restrictions on dual practice. Dashed, red arrows highlight key, probable relationships identified through this study. The questions marks (?) indicate an unknown relationship. Specifically, while we know that dual practice can affect systems positively and negatively, whether and how much dual practice contributes to adverse service delivery outcomes is unknown.

ETHICAL APPROVALS

Ethical approvals were obtained from the Institutional Review Board of the Johns Hopkins Bloomberg School of Public Health (IRB No. 4371), the Makerere University College of Health Sciences - School of Public Health Higher Degrees, Research, and Ethics Committee (IRB No. 11353), the Mulago Research Ethics Committee (Protocol no. 249), and the Uganda National Council for Science and Technology (Ref. No. SS 2883).

FINDINGS

Twenty-three interviews with doctors, nurses, and health managers from various types of facilities, as well as thirteen policy-stakeholder interviews were conducted. None of the respondents approached for an interview declined to speak to us, although a few preferred that our interview not be recorded. Among health facility respondents, about half reported having

dual practice at the time of the interview, or having been previously been involved in private sector work. Respondent characteristics are displayed in Table 2.

The CLDs in Figure 1, Figure 2, and Figure 4 display the factors associated with the presence of dual practice in the system and the emergence of current management practices and policies. This section first describes the feedback and interactions that emerged in relation to government policies on dual practice, as well as, more broadly, the development of a mixed health system in Ugandan. The section concludes with a description of how dual practice is currently managed in Kampala, Uganda.

THE HISTORY OF DUAL PRACTICE POLICY IN UGANDA

The CLDs identify three phases: pre-independence through the 1960s, 1970s through the 1980s, and the 1990's through the present. Table 3 complements the CLDs by illustrating a timeline of critical events that affected the policy and management of dual practice.

Figure 1illustrates a relatively simple system in the first period, pre-independence through the 1960's, where a nascent private sector does not initially provide sufficient incentives for providers to engage in dual practice. There are formal - written and enforced - government restrictions on dual practice, which allow providers to have dual practice only after government hours. Some dual practice opportunities exist, however, government providers only occasionally engage in dual practice, seeking autonomy, a non-financial incentive in private practice. At this time, no evidence has been found that dual practice raised significant concerns about adverse health service delivery outcomes or health system performance. In fact, at this time, Uganda's public service was perceived as one of the most effectives ones in the region (Ssengooba, Rahman et al. 2007). Even as restrictions on dual practice become stronger after Uganda's independence, enough stability exists in the system that limited unintended effects are observed, including any negative effect on the number of government health providers. The Ugandan government is able to provide government health workers with sufficient financial and non-

financial incentives (e.g. satisfactory wages and the prestige of working in a government institution, respectively). One of the policy-stakeholder respondents confirms the general sentiment in this period (Iliffe 1998):

> *"The assumption was, that what the government pays can cater for what you require in real life. So when you go you find, I remember when I was a small kid in the 60's, the salary of a medical officer, medical assistant, the nurse, was capable of catering for everything they required, the basics of life. And they were held with high esteem, they were very ethical. I mean a medical officer would walk with his head high because he would behave the way that they were expected to behave." – Ministry of Health policy stakeholder (P27)*

Figure 2, illustrates a second phase, through the 1970s and the 1980s, during which the Ugandan system undergoes instability of military rule and, eventually civil war. These hardships are intensified by the broader global recession. This period cripples the government health system and marks the beginning of several decades of low government salaries. While the job security and prestige related to government service are still important, the government financial incentives are no longer sufficient for providers who remain in the system. Many government providers resign at this time, or leave the country all-together. Increasingly, government providers who remain in the system seek additional income through dual practice. The same policy stakeholder explained:

> *"Now the economic downturn of the 70s with Idi Amin here, then the wars that have been associated with this regime, and the past regime of Obote, the salary did not have any meaning anymore. And even when you look at the global economy, things have been changing right from the 1972 recession and all these other economic ups and downs we've been experiencing. Um, the global economy has changed impacting everyone, our national economy, and therefore, the country with all the hardships it's had - the economy has not been able to cope with the many social needs. That's why salaries across all public servants have remained very low and therefore public servants have to look for alternative survival mechanisms." – Ministry of Health policy stakeholder (P27)*

Ironically, this period leads to the first large-scale development of the private sector, as the public sector increasingly suffers and government providers "look for alternative survival mechanisms." After Asian doctors were expelled from Uganda for political reasons, many of the Ugandan government doctors who remained in the country re-opened the former Asian private

practices (Iliffe 1998). With increasing opportunities, more government providers are perceived to engage in dual practice.

However, increasing suspicion regarding the quality of services provided in private-for-profit medical practices, compounded by challenges in the public sector related to poor service delivery outcomes and increasing health worker absenteeism contribute to growing suspicion of dual practice – specifically related to potential damages to the quality of services in the public sector and to inefficiencies rising from absenteeism and pilfering of government medical supplies. Consequently, the government begins imposing a strict ban on dual practice and, at one point in 1972, closes all private clinics. As shown in Figure 3, these strong, formal restrictions to dual practice trigger provider protests and resignation, and contribute to provider migration – both of which compromise the supple of government health providers (see left-hand side). Increasing protests and advocacy from professional associations eventually lead to the government relaxing restrictions. Weaker restrictions, which allow dual practice after government hours, reduce the threats to government providers and remove feedback in this part of the system (see right-hand side).

During the 1980s, the global debt crisis and the subsequent structural adjustment program fuelled the development of the private sector, while, at the same time, constraining government budgets (Opio 1996). In this context, the financial benefits of working in private practice significantly exceed those of the public sector, and motivate government providers to engage in dual practice. In summary, we propose, that during this period, dual practice motivates government providers to remain in the public sector, because private practice incentives complement government practice incentives. We also propose that increasing restrictions on dual practice contribute to decreasing the number of government providers, if not accompanied by commensurate changes in the government incentive system (see dashed lines in Figure 2).

As illustrated in Figure 4, from the 1990s to the present, the private sector grows significantly as Uganda recovers from civil war and privatization is encouraged through the structural adjustment program (Opio 1996). The qualitative data revealed that additional drivers of private sector development – in particular, population demand for services, and business investment – are distinct from those in the earlier phases. Further drivers to dual practice opportunities arise in the context of externally funded research or NGO projects, generally within the auspice of government hospitals. Private practice during this period promises significant financial incentives, particularly in contrast to low government salaries.

The increasing population demand and the significant earnings possible through private practice make dual practice a frequent coping mechanism for government providers. The Ugandan government lacks the financial resources to pay its providers an adequate living wage, and, therefore, cannot offer providers an alternative to dual practice. In this context, formal restrictions on dual practice could no longer be identified. The absence of a formal policy on dual practice was confirmed by interview participants and also by our review of Ministry of Health and Ministry of Public Service policy documents. As our respondents illustrate below, current government restrictions are informal – unwritten, not enforced, and based on expectations of provider behavior in the public sector. Additionally, government officials sometimes express conflicting views as to what is allowed and what is not.

> *"I don't think there is a clear policy of such saying that there is no dual practice - that it should not be dual practice. No, we are expected NOT to do it [...][Health workers] know what's supposed to be the normal, but are kind of forced to do it, as I've said, to improve a bit on their earnings. [...]We don't come out to fight it. I can't tell someone please don't go the other end, because there's a reason that is pulling this person to go, and I have no control over that. All I can do is to make sure enforcing that this person is here with me at the right time, for 7 or 8 hours. So we can't influence what happens beyond that.[...] I cannot influence the earnings. [...] The person has the needs, and I can't satisfy the needs in any other way [...] I can't provide alternatives." – Government official (P21).*

> *"A lot of policies are implemented while they are just KNOWN by the policy-makers but they are not written down. So, we know about dual practice and the policy is that um, that it should be left as it is. That people can be allowed to do um, dual practice. [...]It is not written. It's not written at all, BUT they should not take too much of public time to do it. Because of course everybody knows that the salary is too small to sustain, but at the same*

time they are very protective of public time. Unfortunately, there is no mechanism to enforce how much public time people are going to take because [...]a lot of things that have gone wrong, including this dual practice, have gone wrong because of poor regulatory systems."- Government official (P24)

Interviews with policy stakeholders revealed that the government initiated periodic attempts to formalize government restrictions on dual practice, motivated by suspicion around dual practice due to media coverage of adverse health outcomes and poor public sector performance. Restriction attempts are triggered in the context of budget discussions, media and research reports about ghost workers and absenteeism, and increased concerns about quality of care in both public and private sectors - adverse health service delivery outcomes linked to absenteeism, pilfering of drugs, patient deaths in the private sector from suspected malpractice (Chaudhury, Hammer et al. 2006; Businge 2010; Oketch and Obote 2010; Okwero, Tandon et al. 2010; Karugaba and Kwesiga 2011; Kiwawulo and Nsubuga 2013). One of our policy stakeholders expressed these concerns, as they relate to threats to public sector performance:

"When people are not there on time, then you start causing instability in the whole system. I mean, so that time you have to look for someone else to be there, means you are creating a gap elsewhere, where if you don't, that means that what was supposed to be done now is not being done and then we go into these things of uh, long waiting time for patients ... so many things not done and it destabilizes the whole system. And sometimes you find that they are beginning to use wrong persons for some positions for which they were supposed to be. So it's generally not a good thing at all. It disorganizes, it destabilizes the whole system. Yes. And, on top of that, I told you, because they don't get enough rest, their performance level sometimes is low, both in terms of effective time put in work and the efficiency in what they do. It's all compromised." – Ministry of Health official (P23)

Escalating policy discussions around formalizing restrictions on dual practice are often met with provider protests, similar to those displayed in Figure 3 and the government goes back to "keeping quiet" – in this case meaning, informal restrictions. A couple of the policy stakeholders provide examples of such events, which also illustrate that the government increasingly recognizes the role of dual practice in the system, particularly in the absence of changing government pay.

~2005-2007*: "The President gave a directive that it should stop. [...] He said: 'Officer, we are going to work out the methodology of implementing it [...]But we shall not do it broadly across the country, we shall test it in some hospitals.' So we came [to one of the hospitals], and communicated what the President had done, and said, these people [at this hospital] said: 'We hear you loud and clear, but let's agree if I cannot take that Presidential prescription, am I free to leave the government job? So that I can go to the other side [meaning private practice]? [...] we either stay or go? Is that what you're trying to communicate to us?' We said: 'Yes'. Within two days [...] the [hospital] director came rushing to the headquarters to say: 'Guys, stop talking about dual practice because everybody is winding up to go.' So, the [government official] went back and told the President: 'We tried to test it in [a hospital] and all the consultants are not bothered - they want to leave [this hospital]. So I am going to have a white elephant' - the President had no response, he just kept quiet about it and dual practice has gone on." – Ministry of Health official (P27)*

~2010-2011*:"There are no serious policies as such, government sometime back wanted to fix that one that if you work in government you don't work elsewhere but they also realized they don't have the money to pay so they kept it quiet. [...] I think it was last year [...] it has something that has been coming on and off. [...] If you put a policy in place when you are not paying very well, it will of course fail with time because you don't have very good mechanisms... " – Ministry of Health official (P23)*

In response to the cycles of uncertainty related to informal government restrictions to dual practice, as well as to coping with potential negative consequences of dual practice on public sector performance, we found that informal management practices can develop in government facilities. A closer look at the role of these informal management strategies is illustrated in Figure 5. On the left-hand side, in the absence of facility-level informal management practices, when government restrictions on dual practice become stronger, they compromise the supply of government providers. As shown on the right-hand side, informal management practices arise in response to increasing number of government providers with dual practice and aim to reduce any adverse service delivery outcomes in the public sector. Assuming that dual practice is an important incentive for providers to remain in government service (and that sufficient resources to incentivize providers otherwise do not exist), these informal management practices could potentially reduce the occasional strong restrictions to dual practice and any related negative effects on the government workforce. In addition, these management practices could also contribute to minimizing losses of provider effort in the government sector, due to their second

jobs. The practices we identified through the five case studies are described in greater detail in the next section.

INFORMAL MANAGEMENT STRATEGIES FOR DUAL PRACTICE

In the absence of a formal, written policy on dual practice, health managers develop their own approaches to coping with and managing dual practice on a daily basis (see Table 4), generally aiming to encourage presence and performance of their staff during government hours. These approaches are generally unwritten and might depend on the health managers' personal perception and experience with dual practice. For example, one of the respondents explains:

> *"I don't stop anybody from doing that. What [...] I tell them is that: priority is what? Is a core job and your core job is the public service. Once you do my work well, then I don't mind about what you do next." – Case D, nurse (P20).*

The management approaches in the smaller facilities had a lot in common, although the in-charges attitude towards dual practice provided some variations. In general, when facility leadership identified issues, these were discussed in private one-on-one consultations and dual practice was never discussed openly in staff meetings. The lack of public dialogue on dual practice might be rooted in the lack of accountability structures within public sector facilities and the powerlessness of facility in-charges to act and resolve issues linked to health worker performance. Within study facilities, the principal tool available to in-charges for holding health workers accountable were attendance registers, which could be easily falsified. Except for Case C, where the in-charge expressed high confidence in public accountability, facility in-charges expressed frustration at not being able to enforce attendance policies and not having the necessary tools to adequately monitor health workers and health worker performance.

In Case A, the in-charge was accepting of dual practice after government duties are completed. However, the providers we interviewed had a different interpretation of the in-charge's version of "completeness," and reported their government work early. The

misunderstandings associated with this approach were perceived to result in absenteeism in this case.

Case B's facility in-charge had a slightly different approach to managing dual practice, based on personal experience with dual practice. This approach was based on motivating health workers during government hours – whether through supportive supervision or small incentives, such as tea purchased from the in-charge's personal funds – and using an individualized management approach. As this in-charge explains:

> *"You motivate them, you sit with them and share, and when you share with them maybe she could be taking a risky job* [referring to the risk of stress and burn-out linked to working multiple jobs], *when you share with her, you can give her some insight to change maybe to a better one and that is the way how I am helping them. [...] I learned that you have to call someone, call an individual and understand an individual as an individual and her problems are quite different from another one, and so you have to treat it with secrecy and privacy, so I call them in my office to talk to them, and then I advise accordingly, and they change if I say they are going to have problems, they change." – Case B, Facility in-charge (P3)*

In Case B, providers reported being able to manage their two jobs without conflict. One of the providers reported seeing dual practice as a privilege: "if you want to reward yourself by doing an extra job, you have to make sure we [in the government sector] are covered" (Case B, P13).

In Case C, the in-charge had a negative attitude towards dual practice and high confidence in using existing mechanisms for monitoring performance. Providers who were found with multiple jobs (often caught in the private facilities), were asked to quit them in favor of government service. While this in-charge reported confidence in this approach, the other respondents from the facility reported that almost everyone in the facility engaged in dual practice, but this was not discussed with the in-charge.

Although the Case D – the smaller hospital's leadership had a positive attitude towards dual practice, they did not report a specific management strategy, except non-interference.

Doctors reported to cope with dual practice through individual negotiations among their colleagues. However, this was not without pitfalls, as nurses were perceived to compensate for the absence of doctors. Furthermore, doctors appeared to have difficulty responding to emergencies, given that they juggled two or sometimes more places of work.

Case E – the large hospital – had a much more complex environment, with multiple levels of policy, distinct from the other facilities we examined. Respondents from Case E, the large hospital, mentioned several formal, written and enforceable, internal policies and practices linked to dual practice: (1) a memorandum of understanding with externally funded research projects, to stop the active recruitment of government staff to fill full-time positions on projects (P4, P5, P26); (2) a private wing; and (3) a policy whereby nurses were no longer allowed to sign up for "chronic night duties," meaning that they work full time in the government facility at night, and often hold full-time private appointments during the day. According to our respondents, the first and third formal policies managed to improve the attendance of nurses. The private wing was perceived negatively by respondents, who thought that it lacked good infrastructure and the capacity to adequately compensate them, as compared to private practice (P4, P6, P15).

Informally, most respondents reported that, in the absence of open discussion on dual practice, negotiations took place on an individual level. On exception was an informal management practice in one of the departments, which set a flexible scheduling policy in place for doctors, more similar to what would be expected in the private sector. Doctors were entitled to selecting one day off or certain afternoons off, to informally be able to work their private sector hours then, in exchange for reporting to duty otherwise (P5). According to the unit's manager:

> *"We tried to create a bit of flexibility and say, ok, all of us must be on station in the morning, and let's take turns to cover the evening. And maybe trying to bring the evening time a bit forward to, to allow people to earn some extra earning. [...] When I see the outputs, then I don't complain. Yes, and sometimes they come and start early, before 8 o'clock and if someone is here by 7 and even comes back on the weekend to clear if there is any backlog, I think ,really, I can only say thank you because I can't pay them more than they earn." – Case E, Health manager (P5).*

This particular arrangement was not only facilitated by the fact that the unit manager was understanding of the reasons why providers would engage in dual practice and had an output oriented supervision style, but also by the fact that the majority of doctors working in this unit worked in the same private health facility, which was nearby their government location (P16). While it has been in place for almost a decade, this approach created some pitfalls. Non-physicians were not entitled to this flexible policy, and therefore friction arose from time to time between cadres (P16). This approach was perceived to maximize the time government providers spent in the public sector facility, while, at the same time, allowing them the benefits associated with dual practice.

DISCUSSION

This paper aims to contribute empirical evidence on dual practice policy and management practices in Kampala, Uganda. The findings describe how dual practice policies changed over time in the Ugandan system, and how this phenomenon is currently managed within a sample of government facilities. This study represents one of the few exploring dual practice holistically, from multiple perspectives (doctors, nurses, managers, policy stakeholders) and by applying systems thinking tools, such as the CLD. Only a few examples of CLDs exist in health (Patel, Chaussalet et al. 2008; Rwashana and Williams 2008; Rwashana, Williams et al. 2009; Agyepong, Kodua et al. 2012). The CLD provides a platform for visualizing how key variables, relationships, and interactions contribute to the emergence and embedding of dual practice in urban Uganda, and for exploring how different management practices influence feedback in the system. Showing multiple CLDs, in sequence, helps to illustrate how key actors and relationships change over time due to dynamic feedback in the health system.

Dual practice represents an important health workforce adaptation in response to changes in the public health system. The CLD illustrated how dual practice policy developed due to a combination of health and non-health events, feedback, and learning, and that it is presently

strongly interconnected with both the public and private health sectors. The emergence of dual practice mirrored the development of the private for-profit medical practice, which was small scale until about the 1970's, and which rapidly developed in the 1990's and 2000's. During this period, the government's stance on dual practice, influenced by the media, negative perspectives of the private for-profit health sector, and poor service delivery outcomes in the public sector, shifted between strong and weak restrictions to dual practice. Additionally, the government's approach to dual practice shifted from a formal policy to one based on informal expectations. The CLD illustrated how unintended consequences and feedback can and do emerge. On one hand, in the cycle of resistance to dual practice, strong government restrictions can threaten decreases in the already low supply of health workers in public sector facilities, particularly specialists. These negative consequences minimize government efforts to impose strict restrictions on dual practice. On the other hand, well-managed public sector performance and dual practice, could potentially contribute to retaining providers in the government sector, assuming that changes in the incentives for public and private practice remain the same.

We confirmed that a formal, written government policy on dual practice does not exist and that dual practice is currently regulated through a system of unwritten expectations that the government expresses for its providers. Because this approach for regulation leaves room for misunderstanding, it contributes to policy resistance. Additionally, because the government is not able to change the incentive structure (i.e. improve the incentives for sole public practice), any attempts to formalize restrictions on dual practice are also met with resistance. Our data confirmed the existence of self-organization through informal management strategies, which allow health managers and providers to cope with working in both the public and private sectors. Some of these management strategies were easy to identify and describe – e.g. the ones guided by a health manager, as in the example of the hospital department. Other management strategies, based on individual negotiations, presumably depended on internal provider networks, whose development, and also decline, could not be captured through our study methods. These

management strategies could potentially minimize destabilizing effects that arise from the policy feedback and resistance. The purpose of these strategies was not necessarily to curb dual practice, but to maintain performance of the public sector by ensuring the presence of providers and, at the same time, to achieve an optimum balance between government workers' public and private activities and needs.

Among the cases presented here, the informal management strategies did not vary among the lower level facilities, but they did differ between health centers and hospitals. Additionally, they depended in some instances on the health manager's attitude towards dual practice and broader management approach. Across all five case studies, health managers addressed dual practice indirectly, as dual practice was not discussed openly among staff. They found opportunities to intervene as common symptoms of dual practice that threaten public sector performance, such as absenteeism, triggered concerns. However, health facility managers with past personal experience in dual practice (Case B, Case E), had a more flexible approach to managing dual practice, focused on achieving outputs, incentivizing their teams to perform – whether through non-financial incentives and supportive supervision (Case B) or through flexible scheduling arrangements (group from Case E). Case E, the large hospital, had a markedly more complex environment than the smaller facilities, with more opportunities for dual practice and a more diverse workforce. Consequently, it had a wider range of both formal and informal management practices. Here, we found one department that had devised its own scheduling approaches and where the unit's manager held providers accountable based on their outputs and performance, rather than by time spent in the facility.

Our exploration revealed two issues that are relevant beyond the issue of dual practice policy and management. First of all, public sector performance management emerged as an area with significant shortfalls. Across all but one of our cases, health managers expressed frustration regarding the tools and capacity necessary to enforce rules about health worker attendance,

performance, and supervision. In the absence of tools and support for rewarding good performance and punishing poor performance, the tacit, indirect approach to managing dual practice does not sufficiently empower health managers to supervise and enforce boundaries for government employees, who must fulfill their duties in both the public and private sectors. Also, because the nature of dual practice differs among nurses, general practitioners and specialists, cadre-specific management approaches and tools might be appropriate.

Second of all, the nature of the Ugandan health system is very different than it was immediately after independence. Initially designed around the public sector, the private sector, particularly the private-for-profit components have been treated with suspicion and not integrated within a broader vision for the health system. In today's Uganda, the private not-for-profit sector is seen as an extension of the government sector. As a majority of the population, including the poor, relies on the private for-profit sector, increasing government stewardship is necessary to maintain the highest standards of service delivery (International Finance Corporation 2008). In this context, providers engaged in dual practice could serve as a channel for reaching the private for-profit sector and the synergies between government practice and private for-profit practice must be recognized.

STRENGTHS, LIMITATIONS, AND FUTURE RESEARCH

This study represents the first instance when dual practice is examined through a complex adaptive system lens and a CLD is used to illustrate how dual practice creates interactions and feedback in the health system. Additionally, this is one of the few times that dual practice is examined in-depth, from the perspective of both doctors and nurses, and the benefit of insights from multiple types of policy stakeholders. The researcher underwent systematic steps in the design, data collection, and analysis to ensure trustworthiness of the qualitative component. Triangulating study findings from the in-depth interviews across multiple provider types, and, where possible, through available documents helped to establish the credibility of this study.

Exploring dual practice from multiple stakeholders' perspectives brought forth unique perspectives and highlighted the value of studying this phenomenon through multiple lenses, and allowed for additional perspectives to emerge (e.g. general practitioners and specialists). Conducting many of the interviews alongside a local researcher helped to build rapport with respondents and instill trust in our relationship. Respondents provided the research team with candid answers, many of them declared their own current and past involvement in dual practice, and supported their perspectives on dual practice with personal anecdotes. The doctoral researcher's position as a non-Ugandan researcher with a non-medical background generally helped to make respondents comfortable in sharing their perspectives on dual practice, and many respondents almost used the interview as an opportunity to vent their grievances with the current situation in Kampala. Some respondents were visibly more comfortable that the research project was not only associated with the local research institution. Rather than being suspicious of the research, respondents were generally at ease and curious, and trusting in the confidentiality and anonymity outlined in the consent forms. Many respondents wanted to be contacted again with the findings and seemed appreciative of this when some of them were approached during the quantitative phase of the data collection.

Our conclusions are constrained by several limitations. Much of the history of dual practice in Uganda, especially in the first period, relies on a single source and it was not possible to verify the events or written government documents we mention. Because the case studies were based in Kampala, generalizations to rural Uganda are not reasonable, where the opportunities for private practice are substantially different. We could not explore sub-groups in the larger facilities (e.g. the history of groups of specialists might provide interesting insights) or other cadres (e.g. clinical officers) who are also believed to have dual practice. Furthermore, we did not include any demand-side respondents in our study. Additionally, the large hospital was much more complex than the other cases included in our study, and perhaps deserved to be studied in

greater depth. While we did have some policy stakeholders from the private sector, we were not able to study private sector facilities (PNFP and PFP) in-depth.

The causal loop diagram development was completed after in-country data collection ended, and therefore, it was not possible to validate it with the study respondents – although, where possible, we triangulated the information presented in the CLD across all data sources available.

Future research into how dual practice is managed by public not-for-profit facilities and how private for-profit facilities incentivize and contract with their providers would be helpful. Provider networks appear to be important in the context of the individual negotiations that take place in many facilities. A study of these provider networks and the public and private facilities in which they operate would be useful, as well as studies assessing provider preferences on policy alternatives addressing dual practice. More in-depth studies looking at dual practice from the perspective of other cadres, such as clinical officers, or of rural practitioners could provide additional insights into this phenomenon. The informal management strategies described in this paper could be tested by the government in a more formal way to assess whether they are effective at minimizing the negative consequences of dual practice, while helping to seize opportunities for public-private sector synergies. A more in-depth study of the internal labour markets that form in large government health facilities could provide additional insights into dual practice opportunities and management practices. The effects of dual practice on service delivery outcomes, such as quality of services and access to care have not been established in the literature, although there is consensus that dual practice likely contributes both positively and negatively. Validating the CLD relationships with local stakeholders and key informants, as well as translating it into a system dynamics model could be relevant in policy discussions. Furthermore, the CLD could serve as the beginnings for a simulated environment in which to test various policy scenarios and anticipate unintended feedback in the system.

POLICY RELEVANCE

The case studies revealed that informal, local adaptations to managing dual practice exist and provide a natural experiment for various dual practice policies. They also revealed that dual practice was a sensitive issue that attracted political attention and created unintended feedback, at times detrimental to the public health sector. Our study confirms the recommendations of previous studies, which proposed that a ban on dual practice would not be practical or effective (Ferrinho, Lerberghe et al. 2004; García-Prado and González 2007; Kiwanuka, Rutebemberwa et al. 2011; Socha and Bech 2011). The study findings also confirm in the current context that the periodic threats of banning dual practice risk destabilizing the public health sector in places like Uganda, primarily by reducing the government health supply (whether measured by number of providers of the level of effort of providers in government facilities). The private for-profit sector allows government providers the additional financial resources that the Ugandan government is currently not able to supply. In a relationship of mutual dependency, government providers in dual practice allow for the growth of the private for-profit sector in the context of limited health workforce and increasing population demand.

Reforms currently under discussion in Uganda include health insurance and performance-based contracts – both would change how providers are paid. Such reforms could potentially provide an entry point for strengthening public sector management in general, and therefore provide health facility managers the tools they are currently lacking to manage dual practice. As dual practice is unlikely to disappear in the short term, its existence and role in the health sector cannot be ignored during the design and implementation of such major health reforms. Potential feedback should be anticipated based on past events related to dual practice and dealt with accordingly.

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TABLE 1: SUMMARY OF SELECTED CASES

Facility type	**Case A**	**Case B**	**Case C**	**Case D**	**Case E**
Health Center III*	X	X			
Health Center IV			X		
Hospital				X	X
Location					
Central		X		X	X
Periphery	X		X		
Staff composition					
General practitioners			X	X	X
Specialists				X	X
Nurses	X	X	X	X	X
Filled positions	121%	74%	90%	144%	90%

Source: Ministry of Health – Human resources for health audit (Ministry of Health 2009)
*Note: Health Center III units are supposed to be staffed by Clinical Officers and Nurses – although sometimes units do have a Medical officer as well.

TABLE 2: INTERVIEW RESPONDENT CHARACTERISTICS

Facility-based respondents							
		Case A	**Case B**	**Case C**	**Case D**	**Case E**[3]	**Nr. (%)**
Gender	Male	0	1	1	2	4	8 (35%)
	Female	3	2	2	1	7	15 (65%)
Yrs. in service	<10	1	1	1	0	0	3 (13%)
	10-19	0	1	1	0	5	7 (30%)
	20-29	2	0	1	1	2	6 (26%)
	30+	0	1	0	2	3	6 (26%)
Profession	Nurse	2	2	2	1	2	9 (39%)
	General practitioner	0	1	1	0	0	2 (9%)
	Clinical officer	1	0	0	0	0	1 (4%)
	Specialist	0	0	0	2	9	11 (48%)
Dual practice	Yes						10 (43%)
TOTAL							**23**
Policy stakeholders							
Gender	**Male**						12 (92%)
	Female						1 (8%)
Sector	**Public/government**						5 (38%)
	Professional associations						4 (31%)
	Private for-profit						3 (23%)
	Private not-for-profit						1 (8%)
TOTAL							**13**

[3] Years in service not available for one of the respondents at this facility

TABLE 3: A TIMELINE OF CRITICAL EVENTS AND GOVERNMENT POLICY ON DUAL PRACTICE

Year	Event	Dual practice policy	Consequences
Pre-'62	Nr. of African health professionals growing	Weak formal govt. restrictions: dual practice allowed after govt. hours	None
1962	Ugandan independence		
Post-'62	Govt. suspicions about private sector growing Transition to military rule and civil war	Strong formal govt. restrictions: dual practice not allowed	No immediate effects
…			
1972	Asian doctors expulsed		After 1970's events, restrictions to dual practice contributed to resignations from government services and provider migration – therefore reducing the number of govt. providers
…	Ugandan doctors take over private practices		
1974	Government shuts down private practices		
…	Provider protest Advocacy to allow dual practice		
Late 1970's	Government changes policy on dual practice as incentive for govt. providers	Weak formal govt. restrictions: dual practice allowed after govt. hours	Dual practice is a coping mechanism for providers remaining in Uganda
1980's	Govt. suspicions about dual practice and private sector strengthen	Weak, formal govt. restrictions: dual practice not allowed	
1990's			
2000's	Rapid private sector growth, especially after system recovered from civil war, creates increasing nr. of dual practice opportunities	No formal govt. restrictions Informal govt. restrictions on dual practice, with weak influence	
…			
2005-07	MOH tests ban on dual practice in few hospitals		Providers threaten to resign

Year	Event	Dual practice policy	Consequences
2009-10	Office of President establishes Medicines and Health Service Delivery Monitoring Unit Increasing nr. of policy discussions around dual practice, absenteeism, ghost workers Increasing concerns about the contribution of dual practice to decreases in quality and access to care in both public and private sectors		Dual practice important coping mechanism Providers threaten to resign in response to discussions of ban

TABLE 4: INFORMAL MANAGEMENT STRATEGIES FOR DUAL PRACTICE, BY CASE

	Informal management practice	**Attitude for dual practice**	**1-on-1 consul-tations**	**Discuss in staff meetings**	**Incentives / support supervision**	**Effect on the supply of government providers**
Case A	Dual practice allowed after government duties completed	Negative	Yes	No	No	Associated misunderstandings potentially sustain create feedback that decreases the supply of government providers
Case B	Motivate providers to perform at their public sector job; non-interference with health workers lives outside govt. duties	Cautious	Yes	No	Yes	Potentially promotes desirable feedback, by creating conditions to improve public sector performance and retain government providers
Case C	Discourage dual practice; emphasize priority for government duties and high public sector performance	Negative	Yes	No	No	Potentially promotes undesirable feedback by reducing the number of government providers; alternatively threats of disciplinary action could support improved performance in public sector
Case D	Priority for government duties; non-interference with time outside government duties	Positive	Yes	No	No	Potentially does not affect government supply of doctors, but creates tensions among staff.
Case E	<u>Formal policies</u> - Policy preventing nurses to sign up for only night duties (that typically means they have a full-time day job)	Mixed, depends	Yes	No	Yes, in the context of flexible scheduling; N/A for other policies and practices	Potentially effective at reducing the number of nurses working 2 full time jobs. Probably no effect on those with part-time dual practice.
	- Policy preventing active recruitment by research projects					Effective at reducing active recruitment by research and NGO projects, therefore reducing internal dual practice opportunities.
	- Private wing					Ineffective – mild effect on government

	Informal management practice	**Attitude for dual practice**	**1-on-1 consul-tations**	**Discuss in staff meetings**	**Incentives / support supervision**	**Effect on the supply of government providers**
						providers, but has potential if more efficient.
	Informal policies Flexible scheduling					Sustains retention among government providers, particularly specialists. Flexible scheduling creates friction among non-physicians

FIGURE 1: CAUSAL LOOP DIAGRAM – PRE-INDEPENDENCE – 1960S

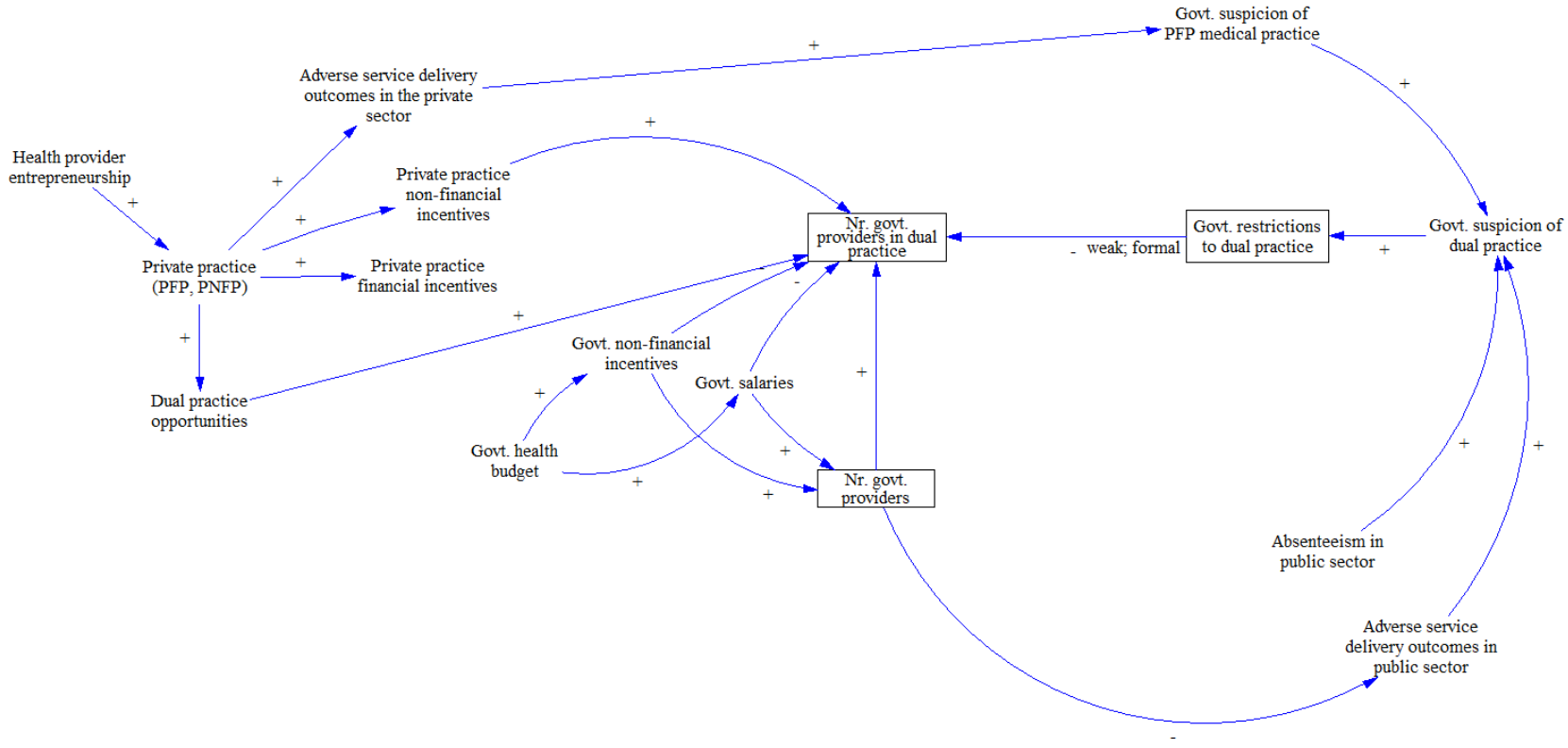


FIGURE 2: CAUSAL LOOP DIAGRAM – 1970S-1980S

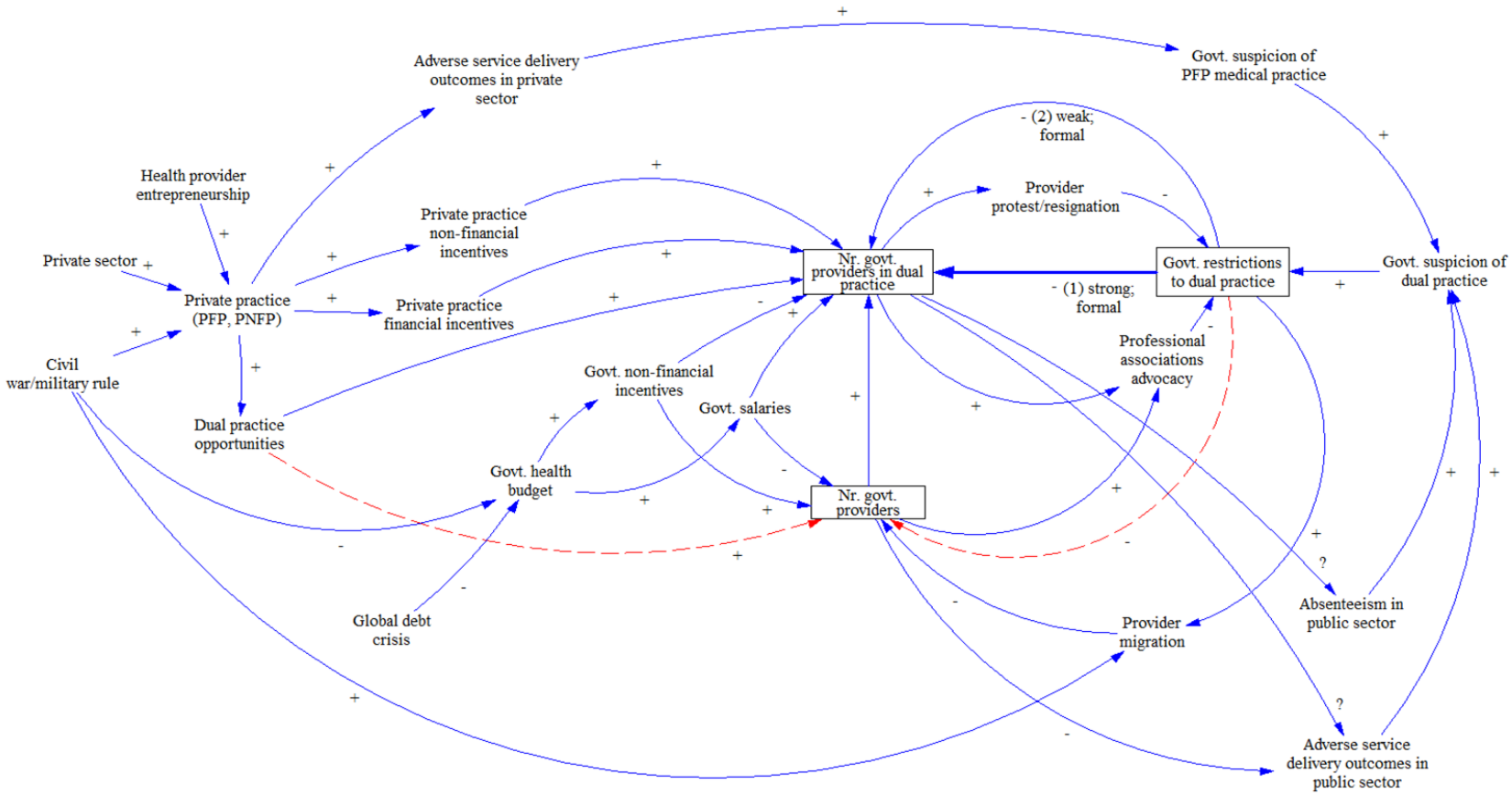


FIGURE 3: CAUSAL LOOP DIAGRAM – CLOSE UP ON FEEDBACK IN 1970S-1980S

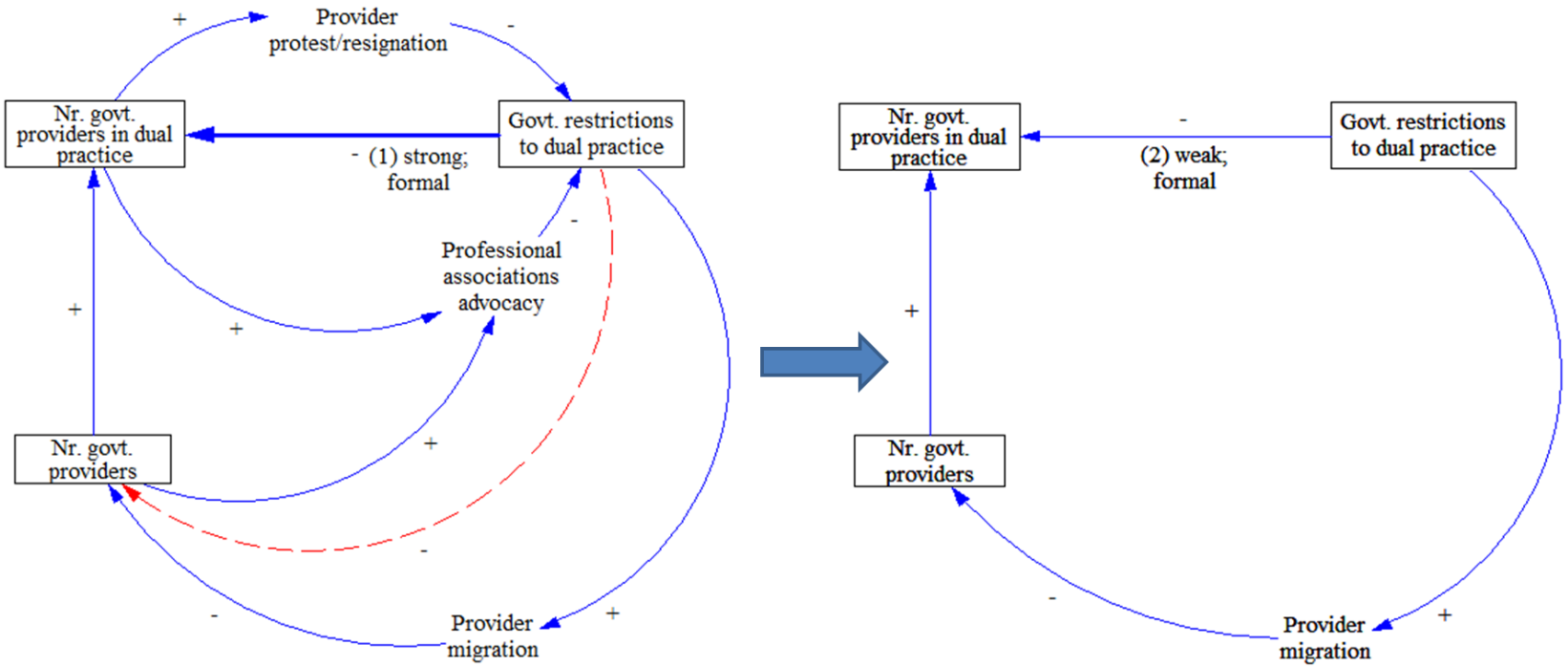


FIGURE 4: CAUSAL LOOP DIAGRAM – 1990S-PRESENT

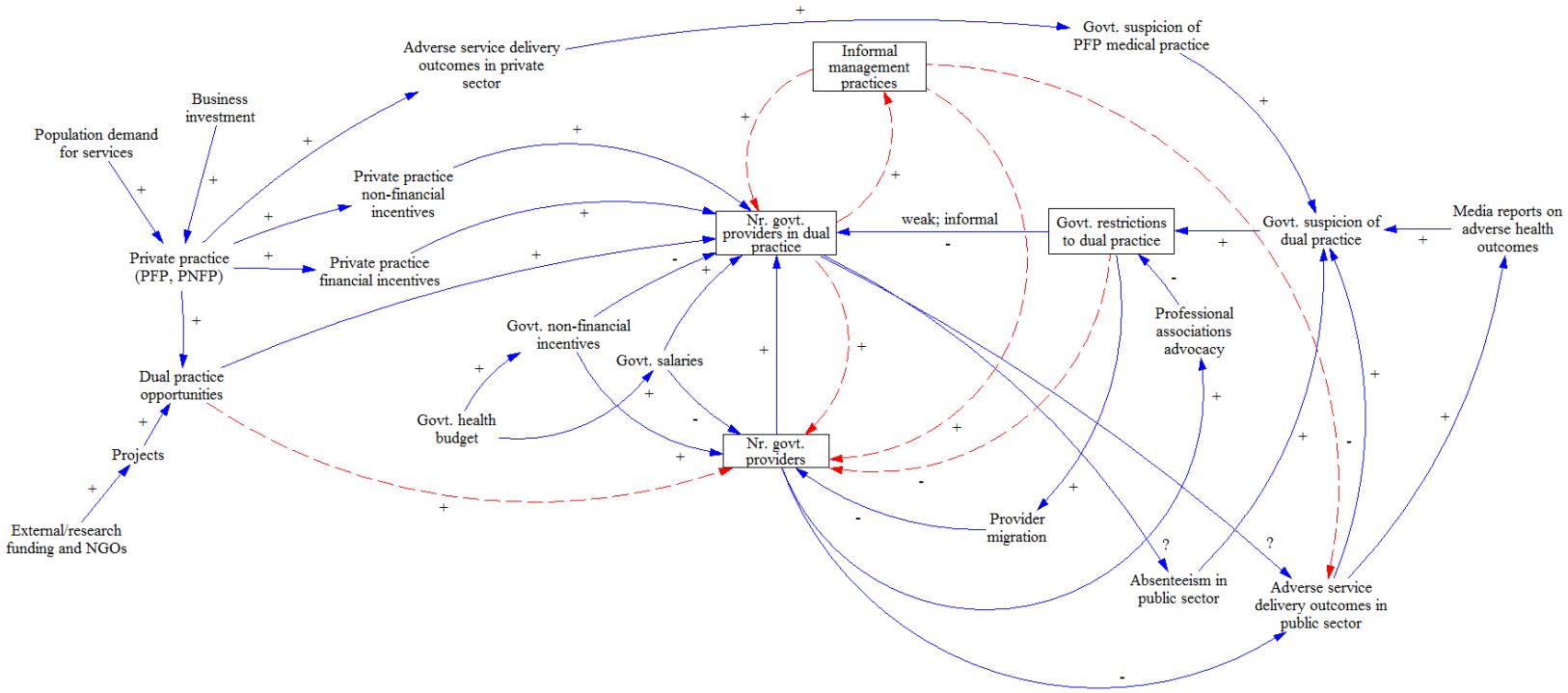
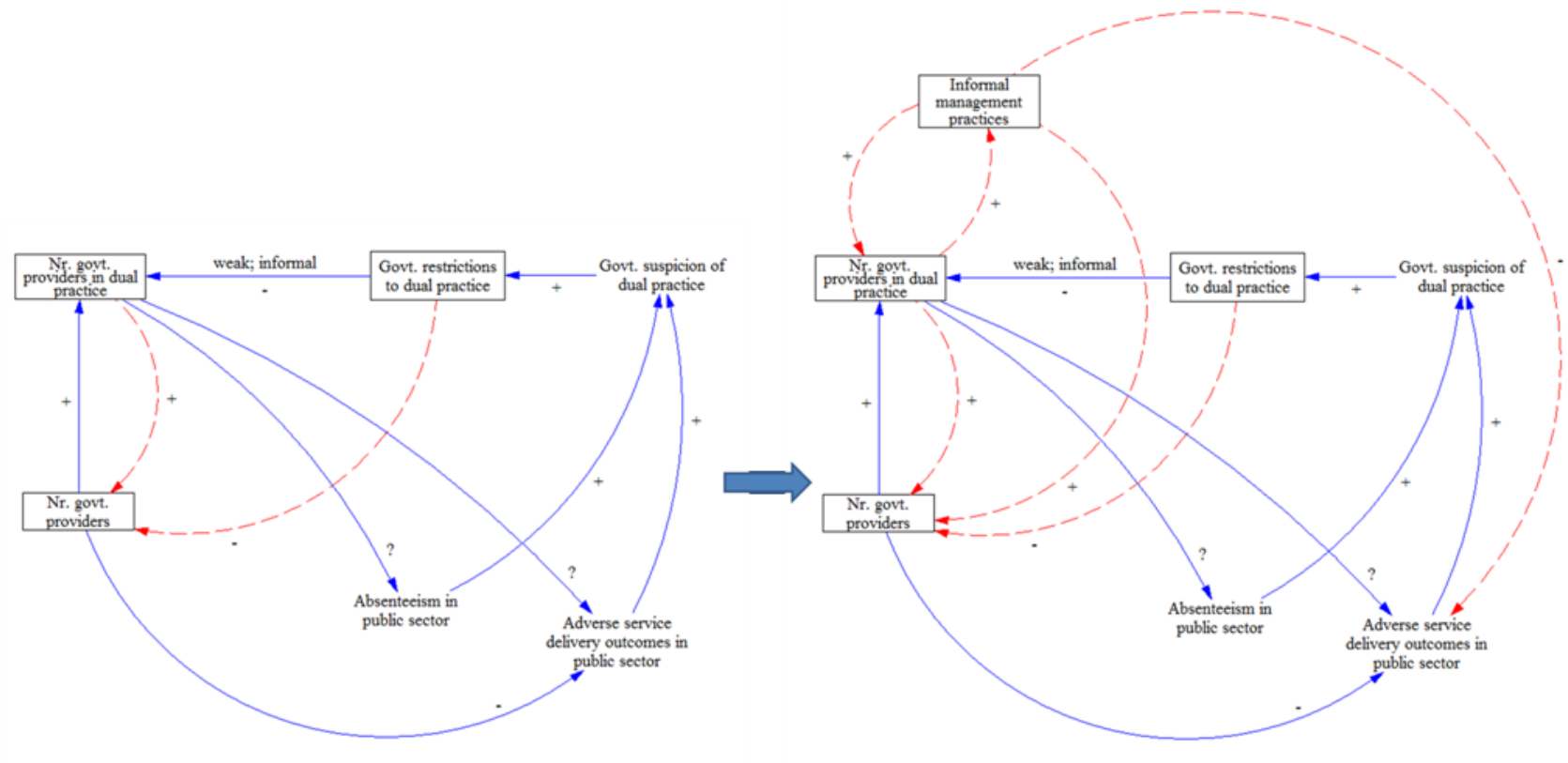


FIGURE 5: CAUSAL LOOP DIAGRAM – CLOSE UP ON FEEDBACK IN 1990S-PRESENT



CHAPTER 4: WHAT DO PUBLIC SECTOR PROVIDERS IN KAMPALA, UGANDA, THINK ABOUT THE CONSEQUENCES OF DUAL PRACTICE? (MANUSCRIPT 3)

ABSTRACT

Background: Dual practice is a widespread phenomenon in low and middle-income countries, like Uganda. While few evaluations of the effects of dual practice on the health system exist, there is broad consensus among health system actors that dual practice can affect the system in both positive and negative ways. Health providers' perspectives on the effects of dual practice and their relative importance have not been explored to date. The purpose of this paper is to identify the perceived effects of dual practice, and to determine their relative importance to public sector doctors and nurses in Kampala, Uganda.

Methods: Qualitative data from interviews with public sector doctors (general practitioners and specialists) and nurses were analyzed to determine the range of perceived dual practice consequences. A self-administered questionnaire including a best-worst object scaling preference elicitation exercise and demographic questions was implemented in Kampala, Uganda in February 2013 with a sample of government doctors and nurses. Eleven items, containing both positive and negative consequences of dual practice were identified to be included in the best-worst object scaling design. Health providers' priority scores were calculated using three methods: most-least scores, square root estimates, and conditional logistic regression.

Findings: In total, 128 government providers in Kampala, Uganda completed the questionnaire. Of these, 126 had complete responses (98% response rate). The additional income gained through dual practice was most important to health providers, followed by absenteeism, poor health worker performance in their government job, and fulfilling unmet need for health services. The three methods used to calculate priority scores produced similar relative rankings.

Discussion: The identification phase confirmed both positive and negative consequences of dual practice. The relatively high priority placed on potential effects of dual practice at the facility level might be a hint that public health sector providers find such effects unacceptable and that policy interventions in these particular areas might be possible. Preliminary stratified analyses – by provider type and by engagement in dual practice – proposed potential heterogeneity across the types of providers.

INTRODUCTION

In many health system settings, health providers employed in public sector facilities often also work in the private sector – a phenomenon most often called dual practice. Dual practice is particularly relevant to low and middle-income countries (LMICs), where the private sector is rapidly growing and remains generally unorganized and where both public and private sector regulatory frameworks are weak. In the few LMIC contexts where it has been studied to date, dual practice is widespread. For example, studies show that over one third of physicians in Vietnam and Cote d'Ivoire, 40% in Sri Lanka and Zimbabwe, and as high as 80% in Indonesia and Bangladesh held second jobs (Chomitz, Setiadi et al. 1998; Gruen, Anwar et al. 2002; Berman and Cuizon 2004; Gupta and Dal Poz 2009; Vujicic, Shengelia et al. 2011).

Dual practice started to recently draw new attention from both health sector policy-makers in LMIC (Asiimwe 2008; Ranson, Chopra et al. 2010) and researchers (Kiwanuka, Rutebemberwa et al. 2011; Kiwanuka, Rutebemberwa et al. 2011; Socha and Bech 2011; Cheng, Joyce et al. 2013; Ensor, Serneels et al. 2013; Hipgrave and Hort 2013), their interests being primarily in how dual practice affects service delivery and health system performance. While data are not available in many contexts, there is a perception that dual practice is very common and that it can negatively affect service delivery and system performance. For example, dual practice is perceived to contribute to decreases in quality of and access to health services in government facilities, as providers might shirk their public sector duties in favor of their private sector ones. Furthermore, dual practice is also perceived to contribute to absenteeism, which is one of the key reasons for wastage and inefficiency in developing country health sectors.

Uganda is one of these LMIC contexts. A study of private sector facilities found that more than half of the doctors surveyed also worked in the government (Mandelli, Kyomuhangi et al. 2005). A similar survey from the perspective of government workers does not exist. However, as presented in Manuscript 1, it is perceived that almost all health workers have dual

practice. A self-administered survey was able to confirm this perception, particularly among specialist doctors.

In Uganda, no studies have been conducted to determine the effects of dual practice on service delivery. The media highlights stories of providers who attend to their dual practice during government hours or divert public sector patients to their private sector facilities, both with negative consequences (Oketch and Obote 2010; Karugaba and Kwesiga 2011; Kiwawulo and Nsubuga 2013). Furthermore, recently published data on wastage in the health sector (Okwero, Tandon et al. 2010), raise questions about the contribution of dual practice to absenteeism, which is very high in Ugandan public sector facilities (Chaudhury, Hammer et al. 2006).

However, studies on dual practice cite both positive and negative consequences of dual practice (Ferrinho, Lerberghe et al. 2004; Garcia-Prado and Gonzalez 2011; Socha and Bech 2011). In Uganda, the qualitative data in Manuscript 1 begins to explain some of these consequences, as perceived by multiple stakeholders at the individual, facility, and health system levels. The relative importance of key consequences has not yet been explained. This paper seeks to identify the perceived consequences of dual practice, from the perspective of government health providers, health facility managers, and key policy stakeholders in Kampala, Uganda. Furthermore, it seeks to establish the relative importance of these consequences from the perspective of health providers. In the absence of evaluations of how dual practice affects the health system, a better understanding of how health providers prioritize the perceived consequences of dual practice could help to shed light on their belief maps when it comes to dual practice and also on potential policy levers for the management of dual practice.

RESEARCH DESIGN AND METHODOLOGY

This study took place in Kampala, Uganda, housing a significant portion of the private sector, as well as of the overall health workforce. We used a mixed methods design to collect

data from a sample of health facilities at various levels in the health system, as well as a number of policy stakeholders.

IDENTIFICATION OF DUAL PRACTICE CONSEQUENCES

The qualitative component was used to identify the perceived consequences of dual practice. Semi-structured in-depth interviews with purposefully selected public sector doctors, nurses, and health managers, as well as with policy stakeholders (government, professional associations, for-profit and not-for profit organizations) were conducted in July-August 2012. The sample was intended to capture the perceived effects of dual practice from multiple perspectives of various actors in the health system. A detailed description of study procedures can be found in Manuscript 1. Through the analysis of the qualitative data, a series of positive and negative consequences of dual practice were identified. Eleven of these were prioritized and the wording was refined based on consultations with faculty advisors and local collaborators. Table 1 shows the 11 items, as well as illustrative quotations from the qualitative data for each of them. These objects include 6 positive consequences and 5 negative consequences of dual practice, which affected system actors at various levels – individual, health facility, and health system. The items identified here are consistent with the range of potential effects described in the literature to date (Berman and Cuizon 2004; García-Prado and González 2006; Garcia-Prado and Gonzalez 2011; Socha and Bech 2011).

BEST-WORST SCALING EXPERIMENT

The BWS was motivated by the fact that our interview respondents listed both positive and negative consequences of dual practice on service delivery, but that the relative importance of these remains unknown.

A cross-sectional, self-administered, paper-based survey to be completed by public sector doctors and nurse in Kampala, Uganda was designed based on the qualitative data, as well as

based on available existing surveys on similar topics. The survey contained three parts: a best-worst object scaling exercise (described in this paper), a best-worst profile scaling exercise (see Manuscript 4), and demographic and professional characteristics (e.g. individual characteristics, professional practice, having dual practice, characteristics about respondents' dual practice activities).

Best worst scaling (BWS) is a fairly recent preference elicitation approach, sometimes described as "a compromise between discrete choice experiments and ranking scales" (Louviere and Flynn 2010; Gallego, Bridges et al. 2012). There are three types of BWS, explained in greater detail by Flynn and colleagues (Flynn 2010). BW object scaling involves eliciting respondent preferences on a list of objects. Random utility theory lies at the foundation of BW object scaling and BWS in general. To date, BW object scaling have seldom been applied to health care issues (Louviere and Flynn 2010; Marti 2012). This is one of the few times that a BW object scaling has been applied in health care in a developing country setting. The proposed advantage of the BWS approach, over rating scales, such as Likert scales or a task requiring ranking a large number of items, is that it places less burden on respondents and does better at discriminating between attributes, while gathering more observations than traditional discrete choice experiments (DCE), which can be more difficult to design and analyze (Ryan, Gerard et al. 2008; Cohen 2009; Flynn 2010; Marti 2012). In the available literature, DCEs have been frequently used to capture health provider preferences (for example (Kruk, Johnson et al. 2010)), but there are no applications of BWS to date.

A modified Balanced Incomplete Block Design was used to develop the choice sets (Louviere and Flynn 2010; Louviere and Flynn Not dated). This type of design is commonly used for preference elicitation methods where not all possible combinations of items can be presented to respondents. The design had 11 items presented 5 at a time in 11 choice tasks or questions and has been previously used in BWS studies (Gallego, Bridges et al. 2012). Table 2

presents the design: the first column represents the choice task or question. The remaining columns present each of the five options that respondents were given. The numbers in the table correspond to the combinations used in this design. For example, Task 1, contained items 1, 4, 5, 9, and 3 in this order. Each of the 11 items repeated 5 times across these 11 tasks. Each choice task asked requested respondents to select the most important ("best") and the least important ("worst") consequence of dual practice on service delivery.

For each of the BW object scaling questions, respondents were presented with a description of the task. Specifically, for each task, they were requested to select the item that was most important and the item that was least important. The introductory prompt was repeated on each page of the questionnaire. Also, before completing the questionnaire, the research team verbally explained the instructions to the respondent and ensured that they had understood them. A member of the research team was available to respondents, in case questions arose during the course of the questionnaire.

Figure 1 displays question 1 of this survey, as an example of the 11 choice tasks presented to respondents. The researcher assumed that respondents followed a sequential best-worst decision making process: participants first choose the most important consequence of dual practice, and then, out of the remaining four items, they choose the least important consequence of dual practice (Gallego, Bridges et al. 2012).

A pre-test of the survey instruments was conducted with five individuals, two nurses and three doctors, in February 2013. Filling out the entire questionnaire, including the 11 BW object scaling questions, took about 20 to 25 minutes for all respondents. After the survey administration, respondents were asked cognitive-style interview questions to better understand their overall thoughts on the survey, how the understood the instructions, as well as particular terms that needed more refinement (Willis 1999). The pre-test revealed that a couple respondents

had a difficult time deciding which perspective to adopt when going through the choice tasks. For example, whether to look at the effects from the perspective of health workers or health service users. Also, respondents had a difficult time making choices between consequences of dual practice that had multiple determinants. For example, long waiting times could be a result of a variety of public sector issues. Finally, pre-test respondents had difficulty choosing between certain characteristics (e.g. absenteeism and poor provider performance) because they are interconnected. Some respondents of the pre-test also thought that the survey method was challenging because the items repeated several times. The instructions were also adjusted to help respondents anticipate the type of questions to be asked. Adjustments were made based on these comments to the extent possible. The final questionnaire can be found in Appendix 3.

Participants and Sample Size

This survey was administered to doctors and nurses in public sector facilities in Kampala: six Health Center III (HCIII), 2 Health Center IV (HCIV), and two hospitals. All but two HCIII facilities were included in our sample. Two of the HCIII were excluded because they were occupational health clinics, and therefore had different staffing and patient profiles than facilities serving the community. The sample of doctors and nurses was obtained through convenience sampling techniques, using latest Human Resources Audit as a reference (Ministry of Health 2011). In each facility, the research team was able to make one or two visits, during which team members attempted to invite as many of eligible providers as possible to participate. Access to providers was obtained from the health facility in-charge, from whom we requested to approach all doctors and nurses in their facility. Many of the in-charges had helped the research team obtain access to providers and key stakeholders during the qualitative phase of the research. We also invited the facility in-charges to participate in our survey, in their capacity of practitioners. Further details about sampling can be found in Manuscript 1.

Clear rules or theories for minimum sample size requirements for BWS do not currently exist (Gallego, Bridges et al. 2012). For general conjoint analysis techniques, Orme recommends aiming for a sample that produces 300 observations per attribute level (as cited by (Bridges, Hauber et al. 2011)). Hensher and colleagues recommend, as a rule of thumb, a sample of 50 respondents per sub-group (Hensher, Rose et al. 2005). While Hensher is referring to traditional discrete choice experiments for this sample, the same logic could be applied to best-worst scaling. Both of these recommendations are "rules of thumb." Accounting for the pen-and-paper format of the survey, as well as constraints in the research scope and budget, the sample size for the current study was developed by using Hensher's guidelines. The target sample was 150 health providers from public sector HCIII, HCIV, and government hospitals in the urban area of interest. During the initial phases of data collection, significant differences emerged between doctors and nurses, and among doctors. Therefore, our sample for the self-administered survey focused on three provider sub-groups: nurses, general practitioners, and specialists. The target sample included 50 specialist doctors, 50 general practitioners, and 50 nurses.

Data collection

Between February and March 2013 a research team comprised of the doctoral researcher and three Ugandan research assistants conducted the survey. The research team had introduction letters from the Makerere University School of Public Health and obtained access to the health facility through the health facility in-charge or the hospital administrator. Potential respondents were approached either in person or by phone, depending on the type of information obtained from the in-charge or the hospital administrator. During the recruitment, respondents were provided with an overview of the survey topic and procedures and were given the option to take the survey – either at that time or at a time most convenient to them, during regular working hours. A member of the research team then followed-up with them. The research team visited all the facilities in person and provided respondents with hard copies of the survey to complete. After

obtaining written informed consent, the research team explained the survey instructions to respondents in order to ensure that they understand the tasks requested of them. None of the respondents refused to participate, although respondents who were on maternity or other type of leave were excluded from the study, as they were not able to take the survey in person.

Data analysis

All quantitative data was double entered using EpiData 3.1. The resulting dataset was exported to Stata 11 for further analysis. The researcher produced descriptive characteristics for the entire sample, as well as for each facility type and/or health provider type, as appropriate using Stata. Differences in proportions between the different health provider types were calculated using the chi-square test.

For the BW object scaling, we calculated three types of scores: (1) most minus least scores, square root estimates, and conditional logistic regression coefficients (Gallego, Bridges et al. 2012). Only surveys with complete BWS data were included in the analysis.

Most minus least scores: An initial ranking of the objects was developed by calculating the difference between the number of times that an object was selected as most important and the number of times an object was selected as least important (Finn and Louviere 1992; Gallego, Bridges et al. 2012).

Square root estimates: Most and least counts were adjusted by dividing them by the sample size (nr. of BWS surveys with no missing data) times the number of times each item appeared in the design. We calculated the natural log of the square root of the ratio of the adjusted most and least counts, estimating the marginal utilities of each of the objects.

Conditional logit regression: Stata ver. 11 was used to run a conditional logit regression to estimate the part-worth utilities for the 11 items. A marginal model of analysis was used to obtain the estimates necessary to produce a ranking of the object from the ones most likely to be selected as "most" important, to the ones most likely to be selected as "least" important. In

preparation for the regression analysis, the dataset was expanded to 2K-1=9 (five best and four worst). The outcome variable was "choice", coded to take on a value of 1 if an item was selected as best, to take on the value of -1 if an item was selected as worst, and zero otherwise. Effects coding was used for the independent variables. Preliminary sub-group analyses were conducted although the sample was not sufficiently powered, and the conditional logit regression is limited in its ability to account for heterogeneity in the sample. These preliminary analyses are presented for illustrative purposes only in the supplementary tables for this Manuscript.

Ethical approvals

Ethical approvals were obtained from the Institutional Review Board of the Johns Hopkins Bloomberg School of Public Health (IRB No. 4371), the Makerere University College of Health Sciences - School of Public Health Higher Degrees, Research, and Ethics Committee (IRB No. 11353), the Mulago Research Ethics Committee (Protocol no. 249), and the Uganda National Council for Science and Technology (Ref. No. SS 2883).

FINDINGS

During the study period, a total of 128 questionnaires were administered in March 2013 to 70 doctors (31 general practitioners and 39 specialists) and 58 nurses from 2 hospitals, 1 or 2 HCIV, and 6 HCIIIs. Although the sample could not be selected based on respondent characteristics such as age or professional experience, the final sample appears generally balanced on most key characteristics, except gender (see Table 3). In Uganda, nursing continues to be a profession mostly dominated by female health workers. Similarly, most doctors, especially senior specialists were male. As dual practice status of participants was now known ahead of the survey, it could not be used as criteria for sample selection. According to the survey findings, of the 128 respondents, about half declared holding a second job in addition to the government work (47.6%). Among different providers, almost all specialists (92.3%), more than

half of general practitioners (58.6%), but only about one tenth of nurses (12.1%) declared holding a second job (see Table 4).

None of the individuals recruited refused to take the survey, although in one of the HCIV facilities it was more difficult to obtain access than in other facilities, and therefore resulted in few participants at this facility. The target sample was not attained because it was difficult to identify additional doctors to participate in the survey during the study period. Nevertheless, the available sample size is similar to other BWS applications in health (Gallego, Bridges et al. 2012). The final sample used for the BWS analysis (126 respondents), had no missing information for the BWS questions (98.4% completion rate).

Although the pre-test estimated that the survey would take less than 30 minutes to complete, some health providers took significantly longer, up to one hour. This is because it was not possible for them to step away from their service delivery duties for a solid period of time, between 20 and 25 minutes. Two of the questionnaires had incomplete information for the BW object scaling questions and these were dropped from the analysis in order to be conservative.

The correlation between the various types of estimates was high (see Figure 2), although the three techniques produced slightly different rankings of the 11 objects. The BWS preference scores for the entire sample, as estimated using the various techniques are presented in Table 5. The most-least scores show that all items were selected at least once as part of the 11 choice tasks.

The additional income for public sector workers was consistently received the highest priority scores (333). According to the most and least scores, the fulfillment of unmet population demand for services (71) and high rates of absenteeism in public sector facilities (69) were the other highest ranked items. Skills transfer between public and private sectors (-135) and reducing the risk of health workers going abroad (-160) received the lowest scores.

The square root estimates are ratio scaled estimates (Gallego, Bridges et al. 2012), and reveal that the additional income for public sector health workers (3.59) was about six times more important than reducing the risk of health workers going abroad, or the skill transfer between public and private sectors (0.57). The conditional logit estimates produced slightly different rankings than the other methods. While income was most important, absenteeism and poor health worker performance in the public sector were most important. Reductions in the risk of health workers going broad, the exposure to learning opportunities in the private sector, as well as the skill transfer between the two sectors, were perceived to be the least important effects of dual practice on service delivery. The remaining items were ranked somewhere in between (see Figure 3 for the complete ranking, based on the conditional logit estimates).

In addition to the overall estimates, preliminary, exploratory sub-group analyses were also conducted to compare preferences among the three different types of providers that were included in this study, as well as between providers who declared having a second job and those who did not (see supplementary Table 6 and Figure 4). As mentioned in our methodology section, the sample size was not large enough for robust sub-group analyses, and the conditional logit model is not ideal for heterogeneous populations. Our exploratory findings found that differences emerged between specialists and other types of providers. Although this was not statistically significant, it is in line with our qualitative findings, where we found that specialists have the highest earning potential and are also in greatest demand in the health system. When exploring the differences between preferences of providers who have second jobs and those who do not have second jobs, we found no difference, although those involved in dual practice seemed to value additional income to a greater degree (see supplementary Table 7 and Figure 5).

DISCUSSION

Dual practice is an important issue in LMIC health systems. Recent reviews on dual practice revealed that, although it is widespread, it has only rarely been empirically documented

(Kiwanuka, Rutebemberwa et al. 2011; Kiwanuka, Rutebemberwa et al. 2011; Socha and Bech 2011; Hipgrave and Hort 2013). In particular, the effects of dual practice on service delivery and the health system have not been empirically evaluated. In light of increasing interest in the topic and demand for more evidence among policy-makers (Asiimwe 2008; Ranson, Chopra et al. 2010), who are particularly concerned about the potential contribution of dual practice to quality of and access to services, this paper helped to identify eleven of the key consequences of dual practice and to determine the relative importance that public sector health providers placed on them.

Consistent with the available literature, the identification phase confirmed that dual practice had both positive and negative consequences – on individual providers, the government facilities that they work on, and more broadly, on the health system. The exploration of provider preferences through best-worst scaling confirmed that providers perceived the additional income to be a very important consequence of dual practice. It also revealed that providers placed great importance on the fulfillment of unmet population demand for health services. However, besides these two positive consequences, providers placed high importance negative consequences of dual practice, such as absenteeism and long waiting times in the public sector, among their highest priority scores.

The relatively high priority placed on potential negative effects of dual practice at the facility level – such as absenteeism and long waiting times – might be a hint that public health sector providers find such effects unacceptable and that policy interventions in these particular areas might be possible. Such policy interventions might include additional supports to health providers and health managers – such as through monitoring and supervision – to improve public sector provider performance. However, given the high priority that providers placed on the additional income and the fulfillment of unmet need, any policy intervention would have to strike a balance to ensure that both individual provider needs and those of the broader population can be met, in a context where both financial and human resources are limited in the public sector.

According to preliminary stratified analyses – by provider type and by engagement in dual practice – proposed potential heterogeneity among respondent groups. This point needs to be explored further. As presented in Manuscript 1, the nature of dual practice and earnings emerging from dual practice differ by provider type. The severity of the shortage in the supply of health providers in Uganda and similar settings also various by cadre – being most pronounced in the case of specialist doctors. Because of this, specialists might not only have dual practice with characteristics distinct from other cadres, but also different perceptions on how dual practice affects the health system. Overall, these findings seem to point towards a policy approach that acknowledges both positive and negative consequences of dual practice, and that takes in account potential heterogeneity in providers' needs and preferences. The BWS preference elicitation method could provide a relatively easy approach to quantifying provider perspectives on dual practice. Various policy options are explored further in Manuscript 4.

Strengths, Limitations, and Future Research

Our study presents the first application of BWS preference elicitation methods to health workforce and policy issues in LMICs, which proved to be relatively easy way to implement and analyze, and can hopefully facilitate the integration of multiple perspectives in the policy process. The BWS was rooted in a rigorously designed qualitative study, raising confidence in the correct specification of the objects used in the survey. Furthermore, the BWS design and analysis methods have been previously used successfully in the published literature. Additionally, the completion rate in the survey was very high. BWS designs have several afore-mentioned advantages – related to ease of design, implementation – when compared to rating scales and discrete-choice experiments (Cohen 2009; Gallego, Bridges et al. 2012; Marti 2012).

The findings of this study should nevertheless be interpreted with caution, due to some of the limitations that could not be overcome in the design and implementation of this study. For example, this study was conducted entirely in an urban setting. Although Kampala houses a large

proportion of Uganda's private health sector, it is unclear to what extent the findings would be generalizable to rural areas or even to other urban areas, where the private sector might be different. Furthermore, the study was designed from the public sector perspective, and therefore, was not able to capture private sector perspectives. The study was not able to include the perspectives of patients and community members on dual practice and its effects on service delivery, although we acknowledge that understanding these would be important. By design, the BWS is a stated preference elicitation tool, and revealed preferences could not be determined through the existing study.

Some threats to validity and reliability arise from the sampling approach for the questionnaire. The sample for the questionnaire was relatively small and sampling was not random. Although the researcher tried to minimize bias, selection bias cannot be avoided through convenience sampling techniques. Furthermore, because the study period was relatively short and the research team visited facilities only a couple of times and only during the daytime shift, it is possible that the study sample underestimates the number of providers with dual practice in the target population. Therefore, the estimates from the quantitative analysis should be interpreted with caution as they potentially underestimate the importance of consequences that would be relevant to providers in dual practice.

The study sample did not have sufficient power for stratified regressions, nor was the conditional logit ideal for exploring differences among sub-groups. Nevertheless, exploratory analyses were conducted to illustrate potentially interesting areas for future research. Although the BWS tried to accommodate all the effects that were mentioned by respondents, the design was limiting and forced the selection of 11 of the items mentioned in qualitative analysis. It is possible that key items were left out inadvertently or that the ones included were incorrectly specified.

Whether the respondents fully understood the questionnaire cannot be determined, as a qualitative phase exploring the cognitive understanding of respondents was not possible for this study (Coast, Al-Janabi et al. 2012), and question asking them whether they understood the task

or their reflection on the overall survey was not included. Furthermore, reliability testing for the survey was not feasible within the timeframe of the study.

Future research should include systematic exploration of the demand side, as well as of the private sector perspective on dual practice. Additionally, it would be interesting to apply these tools to a different context – either rural areas, urban areas with different private sector sizes, or another country – to determine whether this approach to study dual practice is relevant in different contexts, and also the degree to which the findings are generalizable. In systems where gender plays a role in the workforce, it would be useful to reflect on dual practice through a gender lens. While we explored providers' perceived effects, further research on the individual's underlying scales associated with these perceptions, as well as linking the perceived effects with actual effects would add to the validity of BWS methods. Finally, developing the evidence base on dual practice could also allow for the development and validation of indicators and variables to be used in economic models and simulations of dual practice (Gonzalez and Macho-Stadler 2013; Hipgrave and Hort 2013).

POLICY IMPLICATIONS

The findings presented in this paper have implications for policies in Uganda and in other developing countries with similar health workforce profiles. In Uganda, the current study confirms that public sector health providers believe that dual practice affects providers, health facilities, and the health system in both positive and negative ways. While policy-makers should recognize the potential contribution of dual practice to supplementing provider income and to meeting unmet demand for health services, they might also be interested in the contribution of dual practice to absenteeism and poor health worker performance in the public sector. The high importance placed on these items by health providers points to opportunities to draw boundaries between what is acceptable and what is not acceptable when engaging in dual practice. It also

serves as an opportunity to open dialogue about absenteeism and provider performance more broadly.

The BW object scaling preference elicitation approach is applied for the first time in a LMIC setting on the topic of health workforce policy, and paves the way for further applications to diversify the perspectives included in policy-making. In the absence of opportunities to evaluate the effects of dual practice on the health system, understanding perceived effects and the relative importance placed on them by public sector providers or other types of health system actors provides an opportunity to understand the role of dual practice in the health system.

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TABLE 1: BW OBJECT SCALING - THE ELEVEN OBJECTS OBTAINED FROM THE QUALITATIVE DATA ANALYSIS

	Objects or items obtained from qualitative data analysis	**(+) or (-)**	**Data source: Illustrative quotes**
1	Additional income for public sector health workers.	+	"The policy makers know that one of the reasons why people are expressing themselves moving from one job to another, and also doing side business is that the money they're paid, you cannot live on it." – Medical officer Small hospital (P19)
2	Exposure to learning opportunities in private sector.	+	"Maybe they learn, because there're some, some hospitals, like those who work international, they learn new things. They learn new things, coz things are different. Those who work in private, private are different from here. Some have got better drugs, procedures are held differently; they can learn." Facility in-charge HCIII (P2)
3	Neglect of duties while at public sector job.	-	"He's an in charge, he's always away. He works in a health centre in [a government health center], so he's always away, he comes when he wants, you know. And the problem is when they have those additional jobs, especially when they are working for the government, they make sure the additional jobs are well attended to, yes. They never miss there. [The second job] is more prioritized according to them, so this one they just come coz it's a government job" – Facility in –charge HCIII (P2)
4	Health workers stressed due to balancing two jobs.	-	"First and foremost, it is, it is stressing. It stresses you, for instance they may assign you very many tasks in this other job, and then at this other job, you also have tasks to carry out, so you may not be able to accomplish everything." – Facility in-charge HCIV (P1)
5	Skills transfer between public and private sectors.	+	"The skills gained from the private organization may also benefit the health sector. Even then knowledge of those years we used to use like those drugs, essential drugs. But when people started working with the private sector, they discovered that there are better I think that's why you find that even the government can purchase expensive drugs other than […]those things which used to be in the health centers." – Nurse HCIII (P14)
6	Reduce the risk of health workers going abroad.	+	"You see, the people I think have stayed in the country are, probably it is because of this dual practice. Yah, some would've gone away. Yah, because the, the, for example the salaries they get in government. It may not, for some people it may not even pay rent. Yah, so, how does that person stay in the country? But with these supplements from consultancies, you know private practice and so on, they, they're able to stay. Yah, so it's something that has to be looked at more seriously, hmmm." Administrator, Large hospital (P7)
7	High rates of absenteeism in public sector facilities.	-	"Irregularity, (coughs). She usually misses duty, she gives you many excuses, or she comes late, she goes early. Hmm, that's how you know, then when you go deep, they say; *anti, oyo alina omulimo (Aunt this one has another job)*. Then you get to know that she has another job." – Facility in –

	Objects or items obtained from qualitative data analysis	(+) or (-)	Data source: Illustrative quotes
			charge HCIII (P2)
8	Long waiting times by clients at public sector facilities.	-	"Obviously, when people are not there on time, then you start causing instability in the whole system. I mean, so that time you have to look for someone else to be there, means you are creating a gap elsewhere, where if you don't, that means that what was supposed to be done now is not being done and then we go into these things of uh, long waiting time for patients ... so many things not done and it destabilizes the whole system." Public sector policy stakeholder (P21)
9	Provision of patient care after public sector hours.	+	"At the other side yes, here in this facility may be my workmates even the patients themselves, they keep asking you doctor where can I see you because the centre work up to 5:00 and it closes, Friday is typically a day you do not see patients its basically performance activities, meetings, and we do not see patients. Saturday we are still closed and Sunday we are obviously closed so the patients themselves ask you: 'Doctor where can I find you in case this facility is locked on a public holiday? Saturday morning when am having this issue?' They actually feel and eventually get attached to you, they feel it's you who understands their condition and it's you who should always treat them." Medical officer HCIII (P13)
10	Fulfillment of unmet population demand for services.	+	"Now, people who're doing dual practice, they're very good to us, because they're providing services, services which we're unable to provide. Clearly, there're being provided at the private institution, ok. Only one institution cannot provide everything. For example, if you came here yesterday, or if you walked into hospital today, in outpatient, you find people are overcrowded, hmm, they are overcrowded, they're in lines [...] And yet they should be busy working somewhere else, playing a role in promoting the national economy, hmm, but they are in the lines. So if there're in another institution and there's a doctor there, working in another institution during their private time, in the evening or at night, they play a role in promoting the national economy, because that patient being attended to doesn't spent much time waiting, not in line."Administrator Small Hospital (P8)
11	Poor health worker performance in public sector.	-	"One thing I believe is that the people who are owning multiple jobs have swept of what quality of service he is supposed to provide to the people because more so those who are working in government setting, they don't care whether somebody gets what they deserve, the point is he has served, can make them be kept on the pay roll" Medical officer – HCIV (P9)

TABLE 2: BW OBJECT SCALING EXPERIMENTAL DESIGN

Choice task	Option A	Option B	Option C	Option D	Option E
1	1	4	5	9	3
2	2	5	6	10	4
3	3	6	7	11	5
4	4	7	8	1	6
5	5	8	9	2	7
6	6	9	10	3	8
7	7	10	11	4	9
8	8	11	1	5	10
9	9	1	2	6	11
10	10	2	3	7	1
11	11	3	4	8	2

TABLE 3: SUMMARY AND CHARACTERISTICS OF BWS QUESTIONNAIRE RESPONDENTS

Health facility	**Overall**	**HC IIIs**	**HC IVs**	**Hospitals**		
		Nurses	**Nurses**	**General practitioners**	**Specialists**	**Nurses**
	n=128 Nr. (%)	**n= 26** Nr. (%)	**n= 6** Nr. (%)	**n= 31** Nr. (%)	**n= 39** Nr. (%)	**n= 26** Nr. (%)
Age (years)*						
<30	10 (7.8)	1 (3.8)	0	7 (22.6)	0 (0.0)	2 (7.7)
30-39	54 (42.2)	9 (34.6)	1 (16.7)	24 (77.4)	10 (25.6)	10 (38.5)
40-49	36 (28.1)	11 (42.3)	3 (50.0)	0	17 (43.6)	5 (19.2)
50+	28 (21.9)	5 (19.2)	2 (33.3)	0	12 (30.8)	9 (34.6)
Sex*						
Male	46 (35.9)	0	0	19 (61.3)	25 (64.1)	2 (7.7)
Female	82 (64.1)	26 (100.0)	6 (100.0)	12 (38.7)	14 (35.9)	24 (92.3)
Years at facility*						
1-4	82 (64.1)	25 (96.2)	6 (100.0)	25 (80.7)	10 (25.6)	16 (61.5)
5-9	11 (8.6)	0	0	4 (12.9)	6 (15.4)	1 (3.9)
10-19	22 (17.2)	0	0	0	16 (41.0)	6 (23.1)
20+	13 (10.2)	1 (3.8)	0	2 (6.45)	7 (18.0)	3 (11.5)

Notes:
*0 missing

TABLE 4: PREVALENCE OF DUAL PRACTICE ACCORDING TO QUESTIONNAIRE RESPONDENTS (%)

	Overall **n=128** % (95% CI)	**General practitioners** **n= 31** % (95% CI)	**Specialists** **n= 39** % (95% CI)	**Nurses** **n=58** % (95% CI)	**p-value****
Proportion holding 2nd job*	47.6 (38.8, 56.5)	58.6 (39.5, 77.7)	92.3 (83.5, 100.00)	12.1 (3.4, 20.7)	0.000
Proportion holding 3rd job*	10.2 (0.05, 15.7)	6.9 (0, 16.7)	25.6 (11.3, 39.9)	1.7 (0, 5.2)	0.001

Notes:
*2 missing
** A chi-squared test produced p-values for differences in proportions between cadres

TABLE 5: ESTIMATES OF HEALTH WORKER PRIORITY SCORES FROM BEST-WORST OBJECT SCALING ANALYSIS, USING DIFFERENT ESTIMATION METHODS*

Objects	**Most and Least scores**			**Square root estimates**		**Conditional logit estimates**		
	Most	**Least**	**M-L**	**Sqrt**	**Ln Sqrt****	**Coefficient**	**Robust SE**	**p-value**
Additional income for public sector health workers.	361	28	333	3.59	1.28	1.44	0.17	0.000
High rates of absenteeism in public sector facilities.	134	65	69	1.44	0.36	0.59	0.12	0.000
Fulfillment of unmet population demand for services.	161	90	71	1.34	0.29	0.16	0.10	0.085
Long waiting times by clients at public sector facilities.	133	88	45	1.23	0.21	0.16	0.10	0.107
Poor health worker performance in public sector.	116	79	37	1.21	0.19	0.40***	0.11	0.000
Neglect of duties while at public sector job.	101	102	-1	1.00	0.00	0.01	0.09	0.869
Health workers stressed due to balancing two jobs.	90	155	-65	0.76	-0.27	-0.35	0.09	0.000
Provision of patient care after public sector hours.	61	144	-83	0.65	-0.43	-0.24	0.09	0.009
Exposure to learning opportunities in private sector.	89	200	-111	0.67	-0.4	-0.68	0.08	0.000
Skills transfer between public and private sectors.	64	199	-135	0.57	-0.57	-0.61	0.08	0.000
Reduce the risk of health workers going abroad.	76	236	-160	0.57	-0.57	-0.89	0.08	0.000
						Log likelihood		-1882.8959
						Pseudo R^2		0.0866

*Note: n=126

** Adjusted values are calculated by dividing the most and least counts by the number of times an object appears in the design (in this case 5 times) and the sample size (in this case 126 respondents)

***The dropped variable in our analysis; coefficient was calculated as the negative sum of the other coefficient

FIGURE 1: SAMPLE CHOICE TASK FOR BW OBJECT SCALING

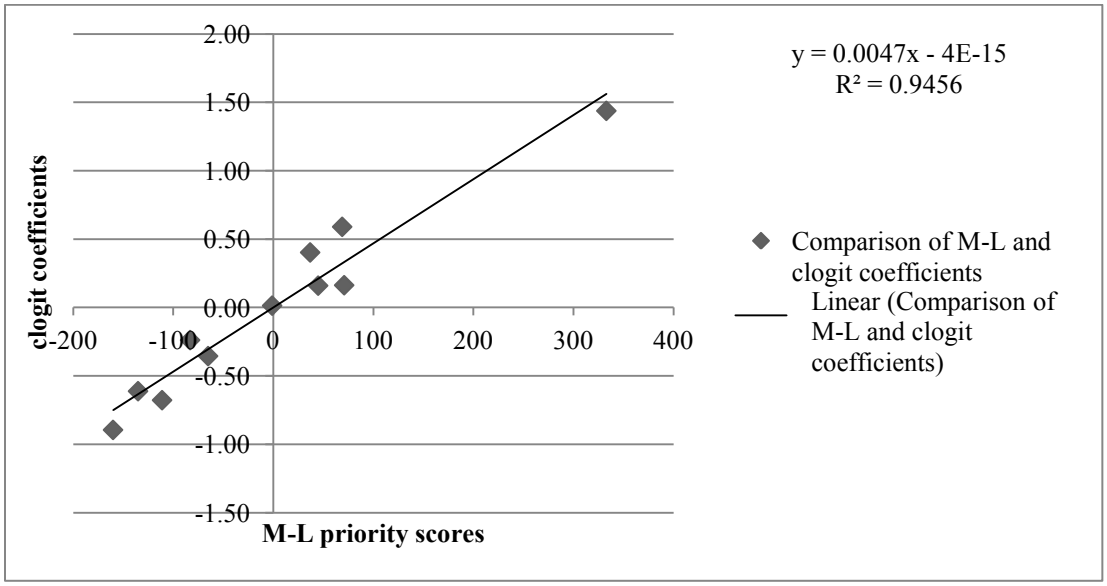
For each question, choose ONE effect out of these five which you think is MOST IMPORTANT for service delivery, and choose ONE effect out of these five which you think is LEAST IMPORTANT for service delivery.

Tick only ONE effect in the "MOST IMPORTANT" column and only ONE effect in the "LEAST IMPORTANT" column for each question.

Q 1.1		Most important	Least important
A	Long waiting times by clients at public sector facilities.		
B	Poor health worker performance in public sector.		
C	Additional income for public sector health workers.		
D	Skills transfer between public and private sectors.		
E	Fulfillment of unmet population demand for services.		

FIGURE 2: COMPARISON OF SCORES OBTAINED FROM THE THREE METHODS

(a) Comparison of M-L scores and clogit coefficients



(b) Comparison of M-L scores and sqrt coefficients

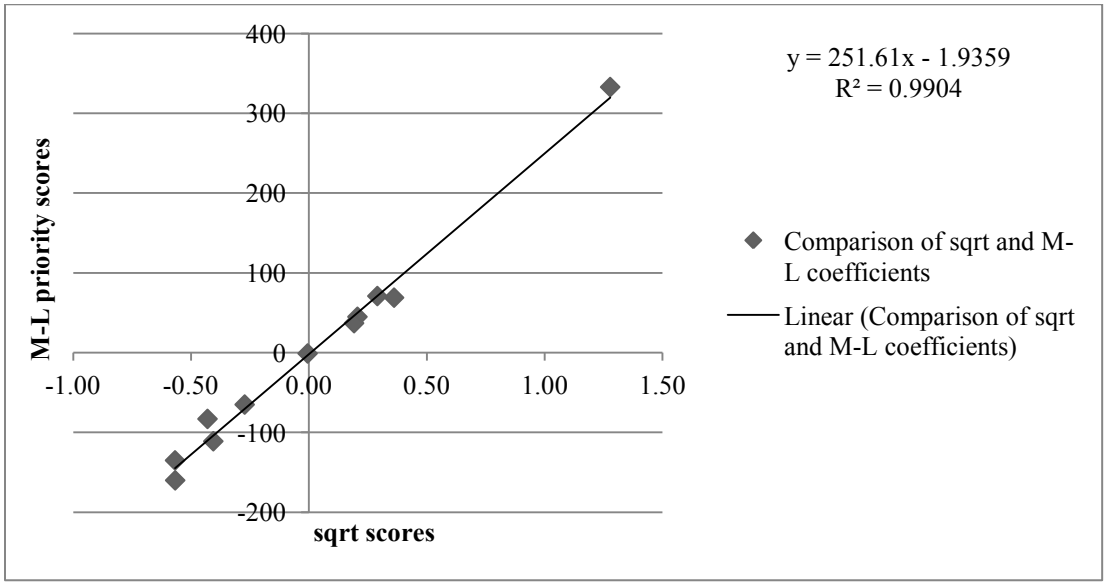
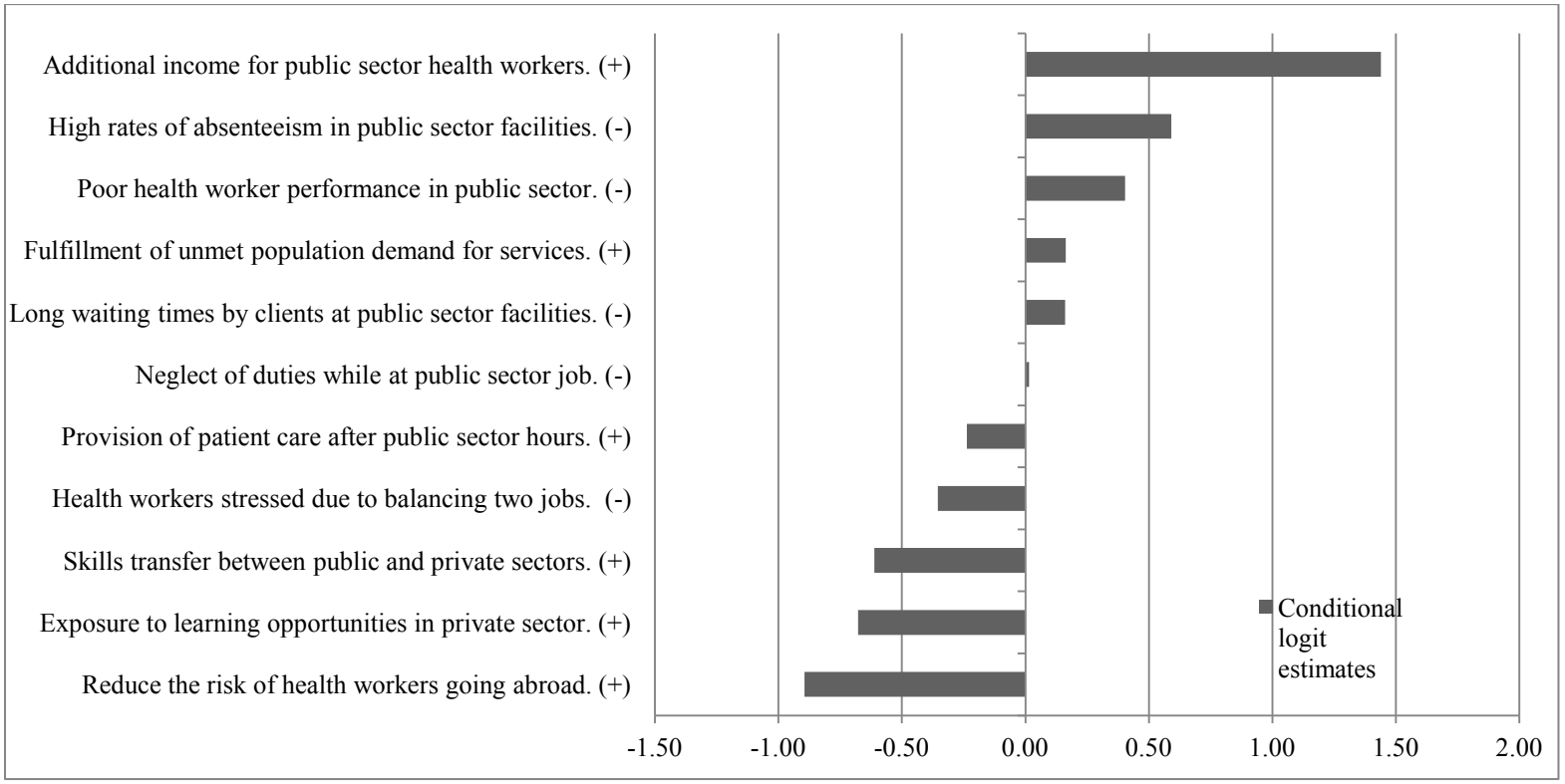


FIGURE 3: RELATIVE DIFFERENCES IN HEALTH WORKER PRIORITY SCORES, BASED ON CONDITIONAL LOGIT REGRESSION ESTIMATIONS, IN DESCENDING OBJECT ORDER



SUPPLEMENTAL TABLES AND FIGURES FOR MANUSCRIPT 3

TABLE 6: CONDITIONAL LOGIT REGRESSION ESTIMATES FOR VARIOUS PROVIDER TYPES

BWS Objects	**General practitioners (n=30)**			**Specialists (n=39)**			**Nurses (n=57)**		
	Coefficient	**Robust SE**	**p-value**	**Coefficient**	**Robust SE**	**p-value**	**Coefficient**	**Robust SE**	**p-value**
Additional income for public sector health workers.	1.29	0.39	0.001	2.29	0.54	0.000	1.10	0.23	0.000
Exposure to learning opportunities in private sector.	-0.53	0.17	0.002	-1.01	0.15	0.000	-0.57	0.13	0.000
Neglect of duties while at public sector job.	-0.05	0.19	0.801	-0.07	0.18	0.713	0.07	0.13	0.595
Health workers stressed due to balancing two jobs.	-0.25	0.19	0.198	-0.71	0.16	0.000	-0.22	0.14	0.104
Skills transfer between public and private sectors.	-0.63	0.16	0.000	-0.77	0.16	0.000	-0.53	0.12	0.000
Reduce the risk of health workers going abroad.	-0.81	0.16	0.000	-1.02	0.16	0.000	-0.91	0.12	0.000
High rates of absenteeism in public sector facilities.	0.11	0.21	0.612	1.61	0.39	0.000	0.48	0.16	0.003
Long waiting times by clients at public sector facilities.	0.05	0.21	0.803	0.10	0.20	0.620	0.25	0.16	0.104
Provision of patient care after public sector hours.	0.07	0.20	0.710	-0.61	0.16	0.000	-0.20	0.13	0.136
Fulfillment of unmet population demand for services.	0.26	0.21	0.216	-0.03	0.20	0.889	0.11	0.13	0.423
Poor health worker performance in public sector.	0.49	--	--	0.21	--	--	0.41	--	--
	Log likelihood = -442.4617 Pseudo R^2= 0.0668			Log likelihood = -531.6487 Pseudo R^2= 0.1343			Log likelihood = -855.9530 Pseudo R^2= 0.0715		
"Chow test": chi2(20) = 27.53; Prob > chi2 = 0.1210									

FIGURE 4: COMPARISON OF PROVIDER PREFERENCES: GENERAL PRACTITIONERS, SPECIALISTS, NURSES, DESCENDING ORDER

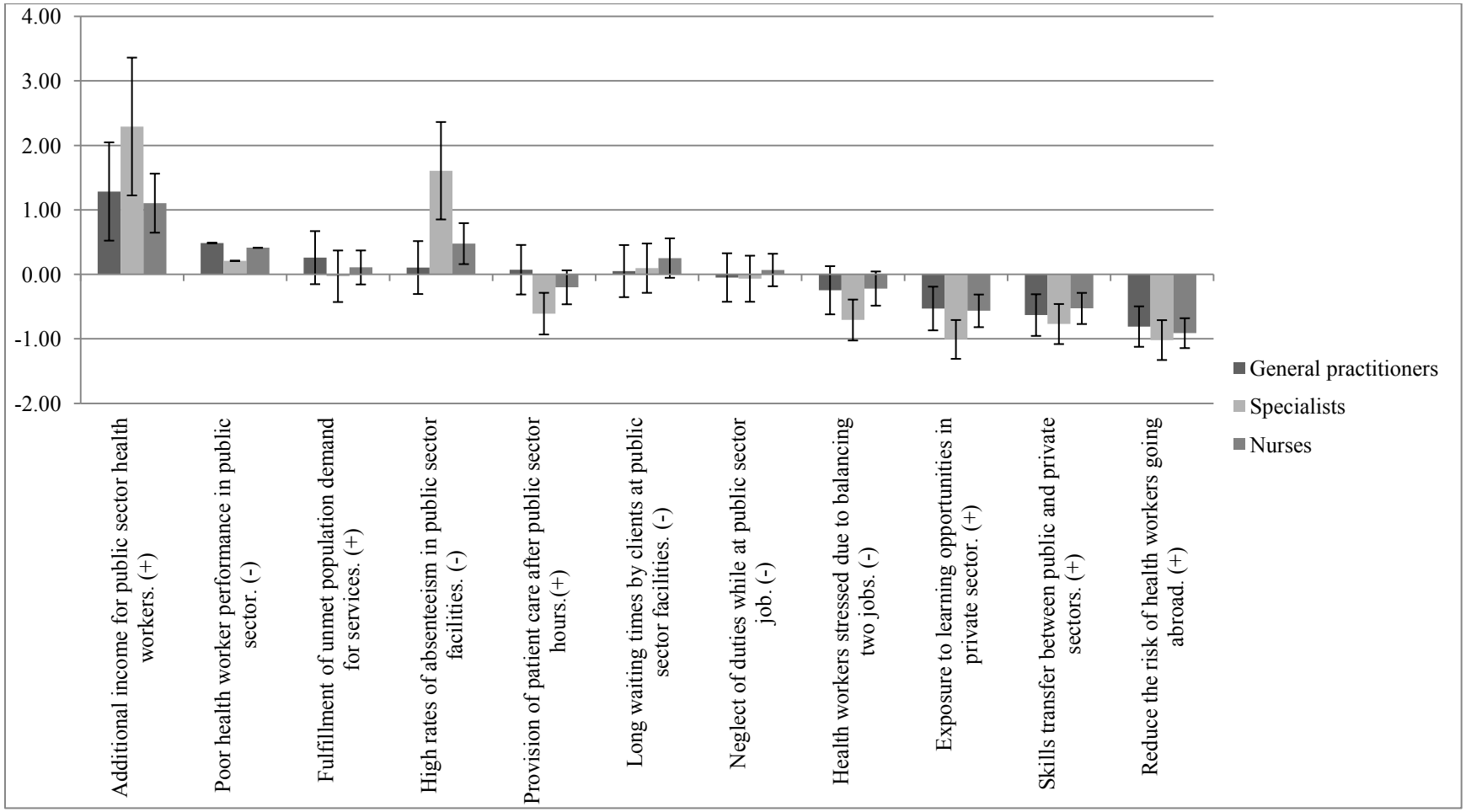
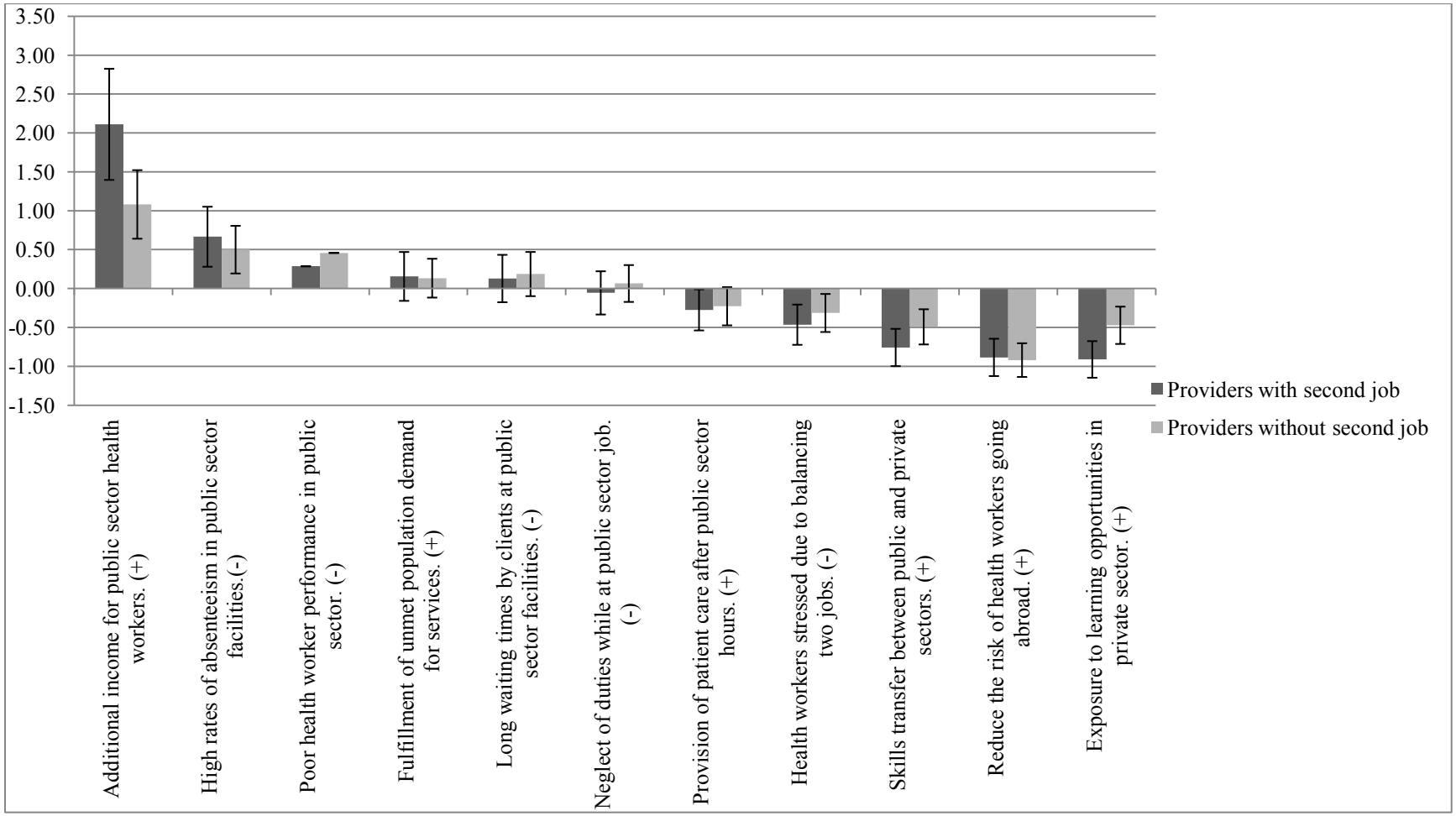


TABLE 7: CONDITIONAL LOGIT REGRESSION ESTIMATES FOR PROVIDERS WITH AND WITHOUT SECOND JOBS*

BWS Objects	**Providers with second job (n=59)**			**Providers without second job (n=65)**		
	Coefficient	**Robust SE**	**p-value**	**Coefficient**	**Robust SE**	**p-value**
Additional income for public sector health workers.	2.11	0.36	0.000	1.08	0.22	0.000
Exposure to learning opportunities in private sector.	-0.91	0.12	0.000	-0.47	0.12	0.000
Neglect of duties while at public sector job.	-0.06	0.14	0.694	0.06	0.12	0.591
Health workers stressed due to balancing two jobs.	-0.46	0.13	0.000	-0.31	0.12	0.012
Skills transfer between public and private sectors.	-0.76	0.12	0.000	-0.49	0.12	0.000
Reduce the risk of health workers going abroad.	-0.89	0.12	0.000	-0.92	0.11	0.000
High rates of absenteeism in public sector facilities.	0.67	0.20	0.001	0.50	0.16	0.001
Long waiting times by clients at public sector facilities.	0.13	0.16	0.408	0.19	0.14	0.198
Provision of patient care after public sector hours.	-0.27	0.13	0.042	-0.23	0.13	0.070
Fulfillment of unmet population demand for services.	0.16	0.16	0.330	0.13	0.13	0.294
Poor health worker performance in public sector.	0.29	--	--	0.46	--	--
	Log likelihood = -835.1229 Pseudo R^2= 0.1062			Log likelihood = -968.4874 Pseudo R^2= 0.0698		
"Chow test" : chi2(10) = 13.26; Prob > chi2 = 0.2094						

*Second job status missing for 2 respondents

FIGURE 5: COMPARISON OF PROVIDER PREFERENCES: PROVIDERS WITH SECOND JOB COMPARED TO PROVIDERS WITHOUT SECOND JOB, DESCENDING ORDER



CHAPTER 5: QUANTIFYING GOVERNMENT DOCTORS' AND NURSES' POLICY PREFERENCES FOR DUAL PRACTICE IN KAMPALA, UGANDA (MANUSCRIPT 4)

ABSTRACT

Introduction: In Uganda, many full-time government health workers are perceived to have additional jobs – a phenomenon called dual practice. A formal government policy on dual practice in Uganda – spelling out whether and to what extent it is allowed – does not exist. More broadly, little evidence exists on the policy interventions used to regulate dual practice. Whether countries should have a policy on dual practice and what it should include is not clear. The objectives of this paper are to identify the perspectives of key stakeholder groups on whether Uganda should have a policy on dual practice, and quantify health providers' preferences for policy options.

Methods: Qualitative interviews with a variety of health systems actors were used to determine the perspectives of key stakeholder groups on Uganda's policy on dual practice. Government doctors and nurses completed a self-administered questionnaire, including a best-worst profile scaling component on policy options. Respondents were required to select the most and least important attribute levels in a series of nine choice tasks containing policy options related to four attributes: salary, work structure, benefits, and dual practice. A conditional logistic regression model was used to estimate the values for each of the twelve levels and the relative importance of the four attributes.

Findings: Most respondents suggested that a formal government policy on dual practice would be useful and that it should include provisions for various types of health providers. Based on the qualitative work, four categories (attributes) of policy elements emerged: salary, work structure, benefits, and dual practice. Each of these contained three policy options. Salary and work structure – specifically a 100% increase in government salaries and supportive supervision – had highest relative importance among attributes. Policy options related specifically to dual practice, such as declaring one's dual practice, for increased transparency, were ranked least important.

Discussion: In Kampala, multiple health system actors perceived the need for a policy on dual practice. The high importance placed on salaries was expected. The importance that providers placed on work structure policy options, and particularly supportive supervision, point to linkages and opportunities between dual practice and broader public sector management improvements. Initial analyses suggest that differences in policy preferences might exist among providers – among general practitioners, specialists, and nurses, as well as between providers who engage in dual practice and providers who do not.

INTRODUCTION

Dual practice is a widely-occurring phenomenon in low and middle income contexts – when government health workers provide health services in the private sector in addition to their formal public sector jobs (Berman and Cuizon 2004; Ferrinho, Lerberghe et al. 2004; Kiwanuka, Rutebemberwa et al. 2011; Socha and Bech 2011). For example, over one third of physicians in Vietnam, 40% in Sri Lanka and Zimbabwe, one third in Cote d'Ivoire, and as high as 80% in Indonesia and Bangladesh held second jobs (Chomitz, Setiadi et al. 1998; Gruen, Anwar et al. 2002; Berman and Cuizon 2004; Gupta and Dal Poz 2009; Vujicic, Shengelia et al. 2011). In Uganda, an East African low income country, a survey of private health facilities found that more than half (54%) of private sector doctors also worked in the public sector (Mandelli, Kyomuhangi et al. 2005). While a similar figure for the government sector is not available, *Manuscript 1* documents that multiple Ugandan stakeholders in Kampala, including doctors and nurses, reported that dual practice was widespread and the vast majority of government health workers were perceived to have additional jobs.

The topic of dual practice has recently piqued the interest of policy-makers and researchers alike. According to a study detailing priorities for health workforce research in LMICs, the impact of dual practice, particularly on the public sector's performance, was ranked as one of the most important questions policy-makers have (Ranson, Chopra et al. 2008; Ranson, Chopra et al. 2010). Existing studies propose that dual practice affects the health system in some manner, but any positive or negative effects are highly dependent on the particular context and are seldom documented (Berman and Cuizon 2004; Ferrinho, Lerberghe et al. 2004; Socha and Bech 2011). Furthermore, little evidence exists on whether countries should have formal policies on dual practice, the policy interventions used to regulate it, their effects on service delivery, and their costs and benefits (Ferrinho, Lerberghe et al. 2004; García-Prado and González 2007; Kiwanuka, Rutebemberwa et al. 2011; Socha and Bech 2011).

In Uganda, a formal, government policy on dual practice, and any associated restrictions or lack of, does not exist. In recent years, dual practice has made headlines in the last few years – through media stories where government providers neglect their public sector duties and patients in favor of private ones (Karugaba and Kwesiga 2011; Kiwawulo and Nsubuga 2013) and through new research about health system wastage through absenteeism and the potential contribution of dual practice to this (Chaudhury, Hammer et al. 2006; Okwero, Tandon et al. 2010). Ugandan policy-makers therefore proposed that more data would be useful on dual practice, particularly around the suspected negative consequences of dual practice on service delivery and the performance of the public sector (Asiimwe 2008).

The objectives of this paper are to begin filling some of the gaps in the literature on dual practice by establishing the perspectives of key stakeholder groups on whether Uganda should have a formal, government policy on dual practice, and, by assessing the preferences of public sector doctors and nurses for dual practice policy elements in Kampala, Uganda.

Using a mixed methods approach, the paper first details a qualitative exploration into the perspectives of multiple types of public sector health providers to establish the demand for a policy on dual practice and to identify policy elements to include in broader policy discussions on dual practice. Next, the paper summarizes quantitative findings from the first-ever application of a best-worst profile scaling preference elicitation survey aiming to systematically explore and quantify the preferences of health workers for various policy elements related to dual practice.

BACKGROUND

In Uganda, low government salaries, a difficult public sector working environment, a rapidly growing private sector fueled by population demand and business entrepreneurship all create an environment ripe with dual practice opportunities. Opportunities for dual practice are most evident in the Central Region of the country. More than two thirds of these private facilities (68%) are in the Central Region and almost half of them (46%) are concentrated in the Kampala

District (Mandelli, Kyomuhangi et al. 2005). As mentioned earlier, the same survey found that more than half (54%) of private sector doctors also worked in the public sector (Mandelli, Kyomuhangi et al. 2005). More recent data or any information on nurses' and clinical officers' private sector activities is not available for Uganda. However, as detailed in Manuscript 1, more than half of general practitioners (58%), almost all specialists (92%), and several nurses (12%) reported having a second job at the time of the survey (See Manuscript 1). While respondents acknowledged both positive and negative consequences of dual practice on service delivery (See Manuscript 1), a formal, written policy acknowledging these and managing potential negative effects of dual practice does not exist (See Manuscript 2). Current restrictions on dual practice are informal and the strength of their enforcement fluctuates depending on a variety of interlinked factors (See Manuscript 2 for further details). As this paper aims to contribute to filling these gaps in the literature, the remainder of this section provides a summary of the literature on potential dual practice policy options and an overview of preference elicitation methods used in this study.

POLICY RESPONSES TO DUAL PRACTICE

The policy options for regulating dual practice fall into the following categories: not allowing dual practice, allowing dual practice using "limiting" or restrictive policies, allowing dual practice using "rewarding" policies, or not formally recognizing the existence of dual practice (García-Prado and González 2007; Kiwanuka, Rutebemberwa et al. 2011; Hipgrave and Hort 2013).

Only a few countries have formally banned dual practice (e.g. China, some states in India) (Garcia-Prado and Gonzalez 2011). While the effectiveness of banning dual practice has not been evaluated (Kiwanuka, Rutebemberwa et al. 2011), a ban is generally perceived as ineffective (Garcia-Prado and Gonzalez 2011; Kiwanuka, Rutebemberwa et al. 2011). Allowing dual practice with either "limiting" or "rewarding" policies intends to mitigate the perceived

consequences on service delivery (Garcia-Prado and Gonzalez 2011). Rewarding policies offer favorable contracts for those agreeing to work exclusively in the public sector (typically a mixture between higher public sector pay and non-financial incentives, as well as the right to see private patients in public facilities). Limiting policies are designed to manage private sector activities – by putting restrictions on private sector income or the number of hours that government workers can spend delivering care in the private sector, or by self-regulation through professional and civil society organizations (Garcia-Prado and Gonzalez 2011). Allowing dual practice without restrictions currently occurs in contexts where the public sector lacks the capacity to hire all physicians (e.g. Indonesia, Egypt), but such an approach is unlikely in countries facing severe health workforce shortages (Kiwanuka, Rutebemberwa et al. 2011). Finally, some countries choose to have no policy at all on dual practice (Kiwanuka, Rutebemberwa et al. 2011).

Currently, no studies exist evaluating these different policy options their effectiveness at mitigating unwanted consequences of dual practice. Generally though, according to available reviews, restrictions on dual practice are most likely to be effective in contexts where regulation by the government and professional associations is both independent and effective – typically difficult to achieve, particularly in low and middle income settings (García-Prado and González 2007; Hipgrave and Hort 2013). Rewarding policies are most feasible when government resources are available and can be allocated efficiently.

While a formal government policy on dual practice does not exist, the government periodically intervenes to stop or curb dual practice (Ref. Manuscript 2). As documented in Manuscript 2, Uganda's lack of policy creates unwritten informal expectations between policy-makers and providers that dual practice is frowned upon, yet without any clear enforcement or consequences. The scarcity of local evidence on the private sector and the labor market, for physician and other health cadres, as well as general weak regulatory capacity, limit policy-

making on dual practice. Furthermore, whether there is demand for a policy on dual practice has not yet been established.

ELICITING PROVIDER PREFERENCES FOR HEALTH WORKFORCE POLICIES

Preference elicitation exercises, such as conjoint analysis and discrete choice experiments (DCE) have gained popularity in research on health workforce policy in developing countries. By having individual providers choose one of two or multiple hypothetical job scenarios, DCEs allow for the development and potential inclusion of evidence on health worker perspectives to policy-making. Several of these studies have been focused on eliciting health worker preferences for job packages that contain incentives for the recruitment and retention of health personnel to rural and underserved areas (Lagarde and Blaauw 2009; Kruk, Johnson et al. 2010; Kolstad 2011). Dual practice has not been directly explored through DCEs, although, it is a key contributor to income, and, particularly in SSA, it is perceived as a factor drawing health professionals away from rural areas, where more dual practice opportunities exist.

Best-worst scaling is a relatively new type of preference elicitation method, which has been introduced to health care research in the past decade (Flynn, Louviere et al. 2007). There are three types of BWS: best-worst object scaling (see Manuscript 3 for example), best-worst profile scaling (presented in this manuscript), and multiple profile scaling (most similar to traditional DCEs) (Flynn, Louviere et al. 2007; Flynn 2010). For each hypothetical choice task in a BWS questionnaire, respondents choose one that is best (or most desirable/important) and one that is worst (or least desirable/important). For the BW profile scaling, respondents are presented with choice tasks that include a profile of attributes and their respective levels. Compared to traditional DCE, a BWS survey produces more information through a greater amount of observations per respondent. Additionally, BWS surveys have been shown to be cognitively easier for respondents (Flynn, Louviere et al. 2007; Potoglou, Burge et al. 2011; Yoo and Doiron 2013). Nevertheless, to date there have been only a few of applications of object scaling

(Louviere and Flynn 2010; Marti 2012) and profile scaling (Coast, Flynn et al. 2008; Al-Janabi, Flynn et al. 2011; Ratcliffe, Flynn et al. 2012; Yoo and Doiron 2013) in health. While the BW profile scaling has been applied most frequently in health, it has never been applied to health policy issues, such as health workforce planning, and it has rarely been applied in a developing country setting.

RESEARCH DESIGN AND METHODOLOGY

This study took place in public sector health facilities in Kampala, Uganda, home to a vibrant private health sector, as well as to a large share of the country's health workers. The decentralized public health sector is serviced by several levels of facilities: National Referral Hospitals and Regional Referral Hospitals, General Hospitals, Health Center IVs, Health Center IIIs, and Health Center IIs (Government of Uganda - Ministry of Health 2010). This study included the main public sector hospitals, all Health Center IV and six Health Center III units in Kampala (two of the HCIII were excluded as they were occupational clinics).

The researcher used a sequential mixed methods design to collect data aimed to answer the research questions of interest. A qualitative component was designed to explore the various aspects of dual practice, as well as to guide the development of the BWS questionnaire.

QUALITATIVE COMPONENT

The qualitative component is essential for the BWS component, as it is intended to guide the exploration and identification of attributes and levels necessary for the design of the self-administrated survey. A multiple case study design, with embedded units of analysis included five public sector facility case studies (one large hospital, one small hospital, one Health Center IV, and two Health Center III). The case studies were selected to showcase different approaches to managing dual practice. In each of these facilities, semi-structured in-depth interviews were conducted with purposively selected providers (doctors and nurses), and health facility managers

in July-August 2012. Additionally, interviews were conducted with public and private sector policy stakeholders. The interview guides were pre-tested with respondents outside of the study area to test comprehension, as well as to gauge the sensitivity of the questions. The interviews were conducted in English, with the support of the faculty collaborator from Makerere University School of Public Health and a research assistant. The qualitative methods, including techniques used to ensure trustworthiness of the qualitative data and validity of the quantitative data are explained in greater detail in Manuscript 1 and Manuscript 2.

Data coding, preparation, and analysis

All qualitative data was recorded and transcribed. In this paper, we used only a subset of the qualitative data. Although respondents were asked a variety of questions in regards to their own experience with dual practice, the organizational culture, and the broader policy environment, of most interest to the aims of this paper were the questions related to the latter, and, specifically, to what respondents would recommend including in dual practice policy. As it was not relevant to analyze the policy question for each case, the data was analyzed by applying the framework approach to relevant data segments.

A framework analysis approach was used to identify, extract, and analyze the data relevant to dual practice policy recommendations. Framework analysis is a qualitative analysis approach developed for applied or policy relevant qualitative research, where the research objectives are determined in advance (Ritchie and Spencer 1994). Framework analysis entails five stages including familiarization, identification of a thematic framework, indexing, charting, mapping and interpretation. The author explored the data through familiarization, identified the key issues, concepts, themes by which the data was to be analyzed, and indexed – or coded – the data, using Atlas.ti 7 qualitative data management and analysis software. However, as mentioned above, not all the data was relevant to the aims of this paper. Therefore, the author extracted the data that was tagged with codes related to these policy recommendations and performed the next

analysis steps only on this particular sub-set. Specifically, this sub-set included the data needed to develop an in-depth understanding of the policy aspects of dual practice and also to design the BWS profile survey.

For the design of the BWS survey, the author and a Johns Hopkins School of Public Health student assistant re-started the framework analysis process, in order to ensure reliability in the process for identifying the BWS attributes and levels. First, they both familiarized themselves with the raw data sub-set. Then, they independently identified a thematic framework and indexed the data, with the aim to identify the concepts and issues that could become discrete policy options and could be transformed in the attributes and associated levels needed for the development of the best-worst scaling exercise. The indexing was conducted manually in this round. After several rounds of discussions to refine the index and to resolve potentially conflicting interpretations of the data, the author and the assistant independently charted the data, with the main categories being potential attributes and levels. Supporting quotes were extracted from the data for each attribute and level, where possible. Mapping and interpretation was conducted jointly, as well as a ranking of attributes and levels based on the frequency they were mentioned, as well as the perceived importance given by respondents. Additionally, the attributes and levels were discussed with the faculty advisor from Makerere University School of Public Health. The explanation of the survey development and related pre-tests can be found in the next section.

QUANTITATIVE COMPONENT

Based on the qualitative data, we extracted the final attributes and their levels, as displayed in Table 1. These were refined through in-country consultations and the pre-test. The qualitative interviews actually revealed several additional attributes or attribute characteristics, which might also be worth exploring in future policy discussions. For example, respondents thought that government salaries would have to be increased by more than 100% in order for

providers to feel less pressure to engage in private sector activities. Indeed, for some cadres, the MOH was considering more than doubling salary levels, according to a couple of our respondents. Furthermore, some respondents mentioned a complete over-haul of the civil service to allow for different provider payment types – such as output-based pay (or fee for service, similar to what is used in the private sector) or performance contracts (currently under discussion for civil servants in Uganda). Additionally, there were many benefits and allowances mentioned, such as transport, lunch or tea allowance, and mortgage loans. Finally, in terms of work structure, many respondents mentioned that improvements in working conditions, though better infrastructure and constant drug supply, and better working equipment would be important.

The self-administered, paper-based questionnaire was developed based on the qualitative data, as described in the previous section. This questionnaire contained three parts: a best-worst object scaling exercise (see Manuscript 3), a best-worst profile scaling exercise, and a series of questions about respondents' demographic and professional characteristics, including questions about their experience in dual practice. The development of the best-worst profile scaling exercise was based on the attributes and levels identified through the process above.

Experimental design

A fractional factorial design resulting in nine choice tasks or questions was envisioned for the BWS profile survey component (Addelman 1962). Four attributes with three levels each, all derived from the qualitative data analysis and related discussions, were selected as a starting point for the design of the self-administered best-worst profile scaling part of the questionnaire. The attributes derived from the qualitative data included salary, dual practice, benefits, and work structure. The three levels identified for each of these attributes.

As part of the best-worst profile scaling questions, respondents were first presented with a description of the task. For each task, respondents were asked to select one attribute-level

combination as most important and one attribute-level combination as least important. The number of attributes and levels was relatively small, however it was not was not possible to present respondents with all possible combinations of attributes and levels (3^4= 81 potential policy elements). A fractional factorial design determined the combination of policy elements to be included in the questionnaire, while maintaining statistical efficiency of model parameters. The design, which allowed for the estimation of main effects, is displayed in Table 2. Each column represents the attributes whose levels are orthogonal (uncorrelated) with respect to each other. This design resulted in nine choice tasks, which all respondents were presented with. Each task was introduced by a prompt that was repeated on each page of the questionnaire. In addition, before starting to complete the questionnaire, the research team verbally explained the instructions to the respondent and ensured that they had understood what they were asked to do. Figure 1 displays an example one of the 9 questions presented to respondents, as well as the introductory prompt. The levels each repeated three times across these 9 tasks.

The self-administered questionnaire, including the nine BWS profile questions, was pre-tested with five individuals in February 2013, two nurses and three doctors. Filling out the questionnaires took about 20 to 25 minutes for all respondents. After the survey administration, respondents were asked cognitive-style interview questions to better understand their overall thoughts on the survey, their comprehension of the instructions, as well as particular terms that needed more refinement (Willis 1999). For the purposes of this questionnaire, the issues most important were question intent (i.e. what does the respondent think the question is asking) and meaning of terms (i.e. the respondent's interpretation of specific words of phrase). Because of the best-worst scaling design of the questionnaire, a few additional areas of interest included: any challenges that respondents had in making choices; choices that were too easy to make; choices that were too difficult to make; choices that were expected, but missing. Pre-test respondents did

not have difficulty understanding the BWS profile tasks. The final questionnaire can be found in Appendix 3.

Sample size and selection

A clear rule for sample size selection for BWS does not currently exist. For general conjoint analysis techniques, Orme recommends aiming for a sample that produces 300 observations per attribute level (as cited by (Bridges, Hauber et al. 2011)). Hensher and colleagues recommend, as a rule of thumb, a sample of 50 respondents per sub-group (Hensher, Rose et al. 2005). While Hensher is referring to traditional discrete choice experiments for this sample, the same logic could be applied to best-worst scaling. Both of these recommendations are "rules of thumb." Accounting for the pen-and-paper format of the survey, as well as constraints in the research scope and budget, the sample size for the current study was developed by using Hensher's guidelines. The target sample was therefore a total of 150 health providers from public sector HCIII, HCIV, and government hospitals in the urban area of interest. The target sample included 50 specialist doctors, 50 general practitioners, and 50 nurses. The researcher distinguished between specialists and general practitioners because the qualitative findings confirmed that dual practice opportunities and practice patterns differ between these two types of providers.

This survey was administered to doctors and nurses within Kampala's public sector HCIIIs and HCIVs, as well as major hospitals during February-March 2013. The sample was intended to be representative of the public sector in Kampala. All but two HCIII facilities were included in our sample. Two of the HCIII were excluded because they were occupational health clinics, and therefore had different staffing requirements and patient populations than facilities serving the community. The sample of doctors and nurses was obtained through convenience sampling techniques, using the information about filled norms based on the latest Human

Resources Audit as a reference (Ministry of Health 2011). In each facility, the research team was able to make one or two visits, during which team members attempted to invite as many of eligible providers as possible to participate. Access to providers was obtained from the health facility in-charge, from whom we requested to approach all doctors and nurses in their facility. Many of the in-charges had helped the research team obtain access to providers and key stakeholders during the qualitative phase of the research. We also invited the facility in-charges to participate in our survey, in their capacity of practitioners. Further details on sampling can be found in Manuscript 1.

A team comprised of the researcher and three local research assistants visited all the facilities in person and provided respondents with hard copies of the survey to complete. After informing written informed consent, the research team explained the survey instructions to respondents in order to ensure that they understand the tasks requested of them. While respondents completed the paper questionnaires, the research team was available to answer their questions.

Data preparation and analysis

All quantitative data was double entered using EpiData 3.1. The researcher reconciled the occasional discrepancies based on the original, hard copies of the questionnaires. The resulting dataset was exported to Stata 11 for further analysis. The researcher calculated descriptive characteristics for the entire sample, as well as for each facility type and/or health provider type, as appropriate using Stata. Differences in proportions between the different health provider types were calculated using the chi-square test.

The random utility framework underlies the best-worst scaling analysis, which implies that the utility a particular respondent q derives from choosing any item i (U_{iq}) is comprised of an

explainable component (V_{iq}) and a random component (ε_{iq}). Our model therefore estimated the following equation:

$$U_{iq} = V_{iq} + \varepsilon_{iq}$$

Where V_{iq} is a vector of policy elements,

$$\begin{aligned} V_{iq} = {} & \beta_{11} salary30\%_i + \beta_{12} salary50\%_i + \beta_{13} salary100\%_i + \beta_{21} dual\_allowed\_dec_i \\ & + \beta_{22} dual\_allowed\_ndec_i + \beta_{23} dual\_private\_in\_public_i \\ & + \beta_{31} benefits\_training_i + \beta_{32} benefits\_overtime_i \\ & + \beta_{33} benefits\_accomodation_i + \beta_{41} work\_pt\_contract_i \\ & + \beta_{42} work\_supervision_i + \beta_{43} work\_monitoring_i \end{aligned}$$

The analysis of the BWS profile data was first conducted by estimating relative attribute impact based on most and least counts. First, we calculated the frequency that an attribute level was selected as most important and the frequency that it was selected as least important. Second, we calculated the difference between most and least important counts for each attribute level. The part-worth utilities values for each attribute level could not be calculated. However, the relative attribute impact was estimated by first calculating the difference in the frequency that an attribute level was selected as most important and the attribute level selected as least important, for each attribute. The difference between the maximum difference and the minimum difference provided an estimation of the total utility associated with a particular attribute. The relative impact then was calculated as the fraction of the total utility associated with a particular attribute from the total utility, obtained as the sum of differences.

In a second step, the analysis of the BWS profile data was conducted using conditional logit regression techniques, based on the equations above. Stata ver. 11 was used to run a conditional logit regression to estimate the utilities for each of the attribute levels. Attributes and levels were coded using effects coding. One of the levels for each attribute was dropped so as to avoid model saturation. The independent variable for choice was a new variable constructed to take on a value of 1 if an item was selected as best and to take on the value of -1 if an item was selected as worst. Choice takes the value of 0 if an item was not selected at all within a particular

task set. The conditional logit model is a frequently used model for BWS analysis, especially with small sample sizes, although it does have limitations, such as the assumption of independence of irrelevant alternatives. It calculates P_{iq}, which is the probability that a particular respondent *q* chooses alternative *i*, conditional on all relevant alternatives in each choice set (or task). A marginal model of analysis was used to obtain the estimates necessary to produce a ranking of the each attribute levels from the ones most likely to be selected as "most" important, to the ones most likely to be selected as "least" important (Flynn, Louviere et al. 2007). Relative attribute impact was calculated using similar methods to the "most minus least", using clogit coefficients instead of frequencies.

Although the sample was not powered to test for differences among sub-groups, in addition to sample level analyses, the research team also conducted preliminary stratified analyses, to explore the preferences of health providers by the sub-groups that emerged as relevant in the qualitative analysis: general practitioners, specialists, and nurses. Additionally, differences in preferences were explored between those providers engaged in dual practice (i.e. having a second job) and those not engaged in dual practice. A "Chow test" was conducted to determine whether subgroup regression coefficients vary significantly.

ETHICAL APPROVALS

Ethical approvals were obtained from the Institutional Review Board of the Johns Hopkins Bloomberg School of Public Health (IRB No. 4371), the Makerere University College of Health Sciences - School of Public Health Higher Degrees, Research, and Ethics Committee (IRB No. 11353), the Mulago Research Ethics Committee (Protocol no. 249), and the Uganda National Council for Science and Technology (Ref. No. SS 2883). All respondents were guided through an informed consent process, through which research team members explained the minimal, but plausible risks associated with participation in this research project, and were guaranteed anonymity and confidentiality.

FINDINGS

Semi-structured in-depth interviews with twenty-three doctors, nurses, and health managers from various types of facilities, as well as with thirteen policy stakeholders were conducted in July-August 2012. Among health facility respondents, about half reported having dual practice at the time of the interview, or having been previously been involved in private sector work (see Table 3).

During the quantitative phase, a total of 128 questionnaires were administered in March 2013 to 70 doctors (31 general practitioners and 39 specialists) and 58 nurses from 2 hospitals, 1 HCIV, and 6 HCIIIs. None of these respondents refused to take the survey. There was only one facility, a HCIV, where the in-charge was not keen on allowing us access to health providers. In this particular facility, we were therefore able to complete fewer surveys than anticipated. Of the surveys we administered, 125 contained complete information (97.6% completion rate). Although the pre-test estimated that the survey would take less than 30 minutes to complete, some health providers took significantly longer, up to one hour. This is because it was not possible for them to step away from their service delivery duties for a solid period of time, between 20 and 25 minutes. The three of the questionnaires had incomplete information for the BWS Profile questions were dropped from the analysis in order to be conservative. The final sample used for the BWS Profile analysis (125 respondents), had no missing information for the BWS questions. For the summary of respondent characteristics, the entire sample of 128 respondents was used. Table 4 displays the characteristics of the BWS questionnaire respondents. In the HCIII and HCIV facilities, the vast majority of respondents were nurses. This was the case because there were no available doctors to talk to at the smaller health facilities. In hospitals, there was a greater balance of the three provider types. As expected, most general practitioners were younger and had less experience within their current facilities than specialists.

SHOULD THERE BE A POLICY ON DUAL PRACTICE IN UGANDA?

Some respondents perceived dual practice as a symptom of the system, rather than something to regulate on its own, and that increases in government salaries would remove the motivation for providers to engage in dual practice, and replace it with motivation to perform in the public sector job (P1, P2, P3, P9, P10, P17, P21, P25) and that improved and supportive supervision (P2, P3, P10, P27, P32), professional development (P2, P3), accommodation and other benefits (P9) and new ways to pay providers, such as performance-based contracting, could create the right incentive system for public servants to perform well in their government jobs (P27).

A second, larger group of respondents believed that dual practice can have both positive and negative consequences, and that "acceptable" dual practice should be made transparent, be defined and regulated by policy (P4, P5, P6, P7, P8, P11, P13, P15, P16, P18, P19, P20, P22, P24, P26, P28, P29, P30, P31, P33, P36). Respondents in this group also suspect that different cadres would need different policies or approaches for management of dual practice (P26) and that public servants should be recognized for the extra hours they work in government facilities through overtime pay (P29). Some respondents felt that given the shortage of health workers, the government could not afford to restrict the movement of health workers, particularly doctors, but instead that it should allow for flexible contracts (P5, P13, P22) and train more doctors, especially specialists (P30). Additionally, hospitals should improve the private wings, which would allow providers to see private patients within government facilities (P4). While these respondents were in favor of a policy on dual practice, they all agreed that the current public sector could be strengthened, first and foremost through improved pay, better supervision, and benefits and allowances for government health workers. Furthermore, most of them also proposed that health workers may not be interested in working two jobs, but that they are forced by stressful circumstances given public sector deficiencies. Not doing anything or banning dual practice altogether was not mentioned by any of the respondents.

HEALTH PROVIDER PREFERENCES ON POTENTIAL POLICY OPTIONS FOR DUAL PRACTICE

The attributes' relative impact was calculated as the average utility across all levels associated with that attribute (Flynn, Louviere et al. 2007; Coast, Flynn et al. 2008). Table 5 displays that the salary attribute was found to have the greatest impact (0.52), followed by work structure (0.34), benefits (0.09) and dual practice (0.05). The attribute importance confirmed the qualitative perceptions of respondents in that salary was important. It was surprising, however, that benefits had a much smaller impact than work structure (i.e. part-time contracts, supportive supervision, time monitoring), as benefits were mentioned much more frequently in qualitative interviews. It is possible that other benefits, or a package of more than one benefit, would have had more importance than a single benefit presented at a time, as in the questionnaire. For the overall sample, dual practice was least important among the attributes. However, this could be expected: if salary and work structure were more favorable, there would be less motivation and hence, less importance, for dual practice and a dual practice policy. It is also possible that the respondents did not understand the various dual practice options, although this was not indicated through the pre-tests and interactions with respondents, after they completed the survey.

The values for each of the attribute levels are summarized in Table 5. The conditional logit estimate for each level represents the value that respondents placed on various policy elements. As expected from the analysis of relative impact, salary had the most value, in particular a doubling of current government salary levels (salary relative impact=0.902). Work structure was the second most important attribute, and, supportive supervision was most valued by respondents (work structure relative impact=0.543). Among the benefits that respondents chose from, they valued the overtime pay the most (benefits relative impact=0.268). Respondents placed little value on the dual practice attribute and the value of each available level was also small. Based on these results, respondents seemed to value private wards slightly higher than the other proposed dual practice options (dual practice relative impact=0.066). The same results are

displayed graphically in Figure 2. The relative impact calculated from the regression was validated through the "most minus least" counts analysis. As shown in Figure 3, the relative impact scores obtained through the two estimation methods are highly correlated, pointing to the reliability of the approach.

The sample upon which this study is based was not powered for sub-group analyses. Furthermore, the conditional logistic regression model might not be appropriate for analyses where heterogeneity is present. The mixed logistic regression model, currently the most recommended model for analyses of heterogeneous data would need a much larger sample than was possible for this study. Nevertheless, some exploratory sub-group analyses were conducted and are presented in Table 6 and Table 7. While the limitations of the analysis prevent the authors from drawing strong conclusions from sub-group analyses, Figure 4 hints that the preferences of various cadres are similar, except for on policy options on dual practice and work benefits. Specialists in particular seem to have different preferences for dual practice, and nurses had different preferences for work structure than all doctors. In Figure 5, differences between providers engaged in dual practice (having declared a second job) and those not engaged in dual practice arise around the same attributes. The differences between the two types of groups examined were found to be statistically significant based on the tests performed, however, these findings should be interpreted with caution given the model's limitations and should be explored further in future studies.

DISCUSSION

This study contributes to the dialogue on how to manage dual practice – whether there should be a formal policy in place and, if so, what it should include. First, it explored the perspectives of multiple health system actors on dual practice in Kampala and whether or not a policy on dual practice should be in place. Second, it presented a simple preference elicitation

tool that was used to estimate how much value health workers place on various policy elements related to dual practice.

Our study confirmed that in Kampala, multiple stakeholders perceived that a policy on dual practice would be useful. However, based on the BW profile scaling options, the focus of such would be to address the short-comings in the public sector health system that drive providers to go into dual practice in the first place. None of the interview respondents suggested maintaining the status quo on dual practice or formally banning it, but instead they suggested that increased transparency on dual practice would be welcome.

The attributes that emerged as important to our respondents are consistent with to the perceived motivation for dual practice proposed in the literature – mainly a mix of financial and non-financial incentives. That salary emerged as the attribute that respondents valued most is not surprising, as low government salary was the primary reason why respondents reported to take on additional jobs. Work structure was also important, particularly supervision. This finding is in line with the data collected through qualitative interviews. It was surprising that respondents seemed to place less value on the benefits attribute, given that this received a lot of attention during qualitative interviews. However, it might be that the package of benefits incorrectly or incompletely specified in the survey. The fact that dual practice had the smallest impact value might propose that the transparency associated to dual practice was less important to respondents than concrete improvements to their work environment. Furthermore, these findings might confirm the perspectives of the interview respondents that felt that dual practice was a symptom of bigger health system issues and that policy attention should be placed on fixing the root problems in the health system.

While this initial, small-scale study can only arrive to conclusions about overall health workers the policy preferences, preliminary explorations of sub-groups hint that differences in

policy preferences might exist among providers – with potential differences arising between general practitioners, specialists, and nurses, as well as between providers who engage in dual practice and providers who do not. The proposed heterogeneity is supported by our qualitative data findings. Our preliminary sub-group analyses hint that dual practice might be more important for some groups, such as specialists, than others, such as nurses. Although this cannot be reliably be concluded from our quantitative analysis given the analysis and sampling limitations, our qualitative findings do propose a similar finding and point to an area that should be explored further.

While this study contributes important information to the dialogue dual practice policy and management, more information would be needed for policy-makers to develop a concrete policy as the provider preferences presented in this paper represent only a starting point. For example, policy-makers would need to compare the costs of dual practice to the potential costs and benefits associated with a salary, work structure, or benefits improvements, and balance them with all the other competing priorities for a limited set of funds. While interview respondents proposed that increased transparency around dual practice would be useful, from the policy-maker perspective there are advantages to maintaining dual practice policies informal.

Although there might not be sufficient information at this point to develop a policy specifically on dual practice, the provider preferences presented in this paper point to opportunities to address some of the negative consequences of dual practice through improvements in public sector management and performance. For example, supportive supervision might address some of the negative consequences of dual practice, but it would also have larger impacts on health worker satisfaction and empower health managers. Salary improvements for health providers are already under discussion, although any increases are not likely to replace private sector earnings in the short term, especially for specialists. Given this situation, policy-makers in Uganda should consider investing their limited resources in

strengthening the public sector work environment and supervision structure. For physicians, and especially for specialists, policy-makers should consider additional options for flexible employment – such as part-time contracts, similar to what is offered in the private sector.

This is one of the first applications of the best-worst profile scaling technique in a developing country setting. The use of primary, qualitative data collected from multiple stakeholders (doctors, nurses, facility leaders, policy stakeholders) in the design of the BWS survey – as compared to the use of secondary data from the literature, should instill a greater degree trustworthiness and validity in the findings. The administration of this survey to busy health care professionals demonstrates that this type of survey could be feasible to implement in other developing country settings, and could provide an easy and relatively cheap approach to obtaining first-hand data on the preferences of health providers.

STRENGTHS, LIMITATIONS, AND FUTURE RESEARCH

This study represents one of the few examining dual practice and provider preferences for policy options. It is also one of the first to apply best-worst scaling techniques to health workforce policy issues. As previously mentioned, the sequential mixed methods design facilitated the inclusion of perspectives from multiple health system actors in the development of the preference elicitation exercise. Furthermore, the availability of both qualitative and quantitative data allowed the triangulation research findings between the two sets of data collected. Conducting the qualitative data analysis on policy options in a team of two increased the credibility of the findings and contributed to the validity of the BWS survey questions. While the study sample was small, the research design reached a variety of health system actors through the qualitative phase, and our best-worst scaling allowed for the productive of many observations by virtue of design.

Nevertheless, some limitations were inherent to the design. For example, our preference elicitation exercise is based on stated preferences and it is possible that providers' revealed preferences for dual practice policy elements would be different. Additionally, there are instances where our research design could not control for bias and some threats to validity and reliability exist. Due to these constraints, our results, particularly the sub-group analyses, should be interpreted with caution. This study was conducted in an urban setting. Therefore it is unclear to what extent the findings would be generalizable to rural areas or even to urban areas where the private sector is different. During the design of the questionnaire, although some pre-testing was conducted and time was allotted for brief cognitive interviews, we did not follow the approach recommended by Coast and colleagues for developing attributes for choice experiments from qualitative data (Coast, Al-Janabi et al. 2012). Coast and colleagues recommend a separate qualitative data collection with the specific aim of ascertaining respondents' comprehension of survey questions. This entails iterative design of the questionnaire, and analysis of the qualitative data using the constant comparative method (Coast, Al-Janabi et al. 2012). Using this approach could have provided us with greater confidence that the wording of the tasks was appropriate for the context and that all respondents understood the items and ranked them using the same underlying scale. Further tests to determine whether scale differences exist, for example, between most important and least important characteristics, could compensate for this shortcoming.

Data collection for both the qualitative and the quantitative component took place during the work day, between the hours of 7am and 6pm. These hours encompassed official government hours, when our contacts at the health facility suggested we conduct our research and when the majority of respondents were be available. However, because we only conducted data collection in public sector facilities, with only health workers that were present, it is possible and likely that we missed health workers who were absent, potentially because of their participation in dual practice. The data collection team tried to mitigate this in two ways: first by making multiple

trips to facilities at various times in the day and second, where the mobile numbers of respondents were available, to make appointments with these respondents at their convenience, when they would be present at the government facility and when they anticipated not being as busy. Nevertheless, this approach probably missed nurses who only worked nights in the public sector (the "chronic" night duties mentioned in Manuscript 2) and who worked exclusively in the private sector during the day. Furthermore, the sample was not selected randomly and, as mentioned in Manuscript 1, it is not representative of the target population, particularly in the case of general practitioners and specialists. Therefore, some of the preferences, particularly for transparency around dual practice might be underestimated. Additionally, repeat testing to examine reliability were not possible. Moreover, sufficient power for more sub-group analyses, for example comparing the various provider types among respondents who declared having multiple jobs, was not available. Also, the conditional logit model might not be the best model to use for sub-group analyses, and other models, such as the mixed logit should be employed when larger sample sizes become available related to this topic.

The researcher's role as an outsider in the Ugandan context was both a strength and a potential limitation during the qualitative data collection. It was a strength because some respondents were visibly more comfortable being interviewed by the researcher, as she was not part of a local institution where respondents were known or had colleagues. In several cases, it seemed as if the respondents appreciated the opportunity to vent about the hardships related to their dual practice and the challenges of working in the Ugandan public sector. At times, the researcher's role as an outsider was a potential disadvantage. Access to one facility was almost not granted until the local research assistant was able to build a rapport with the facility in charge and gain trust by explaining the purpose of the study in the local language.

Future research should quantify the effects of dual practice on service delivery and should determine the costs and benefits of different dual practice policy scenarios. Further studies could build on our findings by refining the best-worst profile scaling tool and implementing it in rural areas, with additional cadres, and include additional attributes or levels. Conducting similar experiments in other settings would provide opportunities for cross-country comparisons of policy options. For rigorous and valid sub-group analyses, larger samples of the cadres of interest are needed and additional statistical models should be explored. Exploring the preferences of PNFP providers might be relevant for the government policy, since the PNFP sector is often treated as an extension of the public sector. Policy analyses evaluating various policy pilots would also be useful, particularly for establishing associated costs, effectiveness, and feasibility to scale-up, and have never been conducted before on the topic of dual practice.

POLICY IMPLICATIONS

This study responds to the policy-makers' call for more research on dual practice in developing settings. Overall, the various stakeholder groups we consulted as part of this study seemed to have demand for a policy on dual practice. From the health provider perspective, improvements in government salaries and work structure – specifically support supervision – were more important than transparency of dual practice. From a policy-maker perspective, provider preferences for policy options point to broader public sector management issues, which address health workforce issues beyond dual practice. The government of Uganda has been working to improve government health worker salaries and increases are expected for both doctors and nurses, similar to the proposed salary increases studied here. For nurses, the increased salaries along with improved supervision might begin to remove some of the nurses' incentives for dual practice or for underperformance in their government job. However, it is unlikely that government salaries could feasibly match what providers can currently earn in the private sector, particularly for medical consultants or specialists. For example, preliminary

findings presented in Manuscript 1 propose that specialists can earn up to 3 or 4 times their government salaries through their dual practice. In the absence of sufficient evidence to design a policy on dual practice, or on health system resources to address policy options specifically related to dual practice (e.g. over-time work), policy-makers should focus on optimizing public sector management and perhaps also re-examining health workforce education and recruitment. For health workers that are fewest in numbers, such as specialists, part-time contracts and improved opportunities to see private patients in government facilities might be an interim solution to enhancing specialist presence and performance in the public sector.

The examination of policy options for dual practice also contributes evidence to health worker and stakeholders' perspectives on the priorities to be addressed for improving health workforce management in general. Uganda's situation is not unique. Although the findings might not be generalizable to other settings, the methodological approach provides a systematic approach for understanding dual practice and health providers' preferences can be adapted to other settings.

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TABLE 1: FINAL SET OF ATTRIBUTES AND CORRESPONDING LEVELS

Attribute	Levels	Description	Quote (Reference for quote) – emphasis added
Salary	30% increase in government salary (s1)	Government health workers receive 30% salary increase.	"It is **only when they increase someone's salary** and, someone is satisfied with whatever they serve in, that he can fulfill the duties at all. Because what causes these people to go for multiple jobs, is what they, whatever they are getting is not enough." (442) *Final levels determined based on in-country consultations and pre-test
	50% increase in government salary (s2)	Government health workers receive 50% salary increase.	
	100% increase in government salary (s3)	Government health workers receive 100% salary increase.	
Dual practice	Allowed, if private practice schedule declared formally to supervisor (d1)	Dual practice allowed, but only if formally declared to ones immediate supervisor (i.e. private practice schedule, location)	The various policy options were drawn from the literature. *Final levels determined based on in-country consultations and pre-test.
	Allowed, not required to declare private practice schedule (d2)	Dual practice allowed informally, no requirement to declare private practice schedule, location).	
	Providers allowed to see private patients within government facilities (d3)	Dual practice allowed within government facilities – i.e. private wings/wards in hospitals, seeing private patients in smaller facilities	"If **private wing** was more efficient or actually privatized, fully stocked and equipped and private patients can find you, then personnel would be more available to [...] patients. Would encourage to strengthen private wing that attracts clientele for [...] specialists."(151)
Benefits	Sponsorship for training for new skills every 3-5 years (b1)	Merit-based opportunities for continuing education that could qualify health workers for promotion (i.e. not just short courses)	"**The promotion will come in when you have at least upgraded or whatever**. [...] now days when you go back, you have to sponsor yourself. [...] They have to sponsor, just in case someone is going back for studies, they have to be sponsored." (464)
	Overtime pay for work beyond 40 hours per week (b2)	Extra pay for working more than 40 hours per week (additional hour allowance)	"The reason why I'm on the 40 hours is because the unfairness of it all is that health workers are not given an **on-call allowance** in Uganda. [...] But you will find health workers in Kenya, in Tanzania, are given an on-call allowance." (875)
	Government-sponsored accommodation (b3)	Tea breaks, lunch, and accommodation in addition to monthly salary.	"Take an example of accommodation, if I had accommodation there is no way I would say I don't work over the weekend, maybe there is no way I would say I don't work over night." (407)

Attribute	Levels	Description	Quote (Reference for quote) – emphasis added
Work structure	Part-time government contract (w1)	Health workers can be hired to the government sector through part-time contracts	"This business of employing people full time, **I think they can also go into contracts.** And say - you work for us, you give us half day - either in the morning or the afternoon, eh?" (162)
	Regular supportive supervision (w2)	Regular supervisor support to improve performance.	"Then supervision. You know when they come around, and then they, they need someone who is a reasonable, hmm, who's neutral, not side lining with someone, takes supervision, routine supervision." (0069) *Wording refined based on pre-tests and in-country consultations
	Stricter job monitoring by using clock-in mechanism (w3)	Increased job monitoring using a clocking in-mechanism.	"For example in other places, they have this **clock- in**. those would be the best medicine. Because if you don't put your thumb, someone will not put it in for you. [...][**electronic ones] they are the best solution**, because you miss, they know.[...]So, if you don't **sign in my register, you sign in the statement book**"(57-59)

TABLE 2: BEST-WORST PROFILE SCALING EXPERIMENTAL DESIGN

Choice task	**Attribute A**	**Attribute B**	**Attribute C**	**Attribute D**
1	3	2	1	3
2	3	1	2	2
3	2	1	3	3
4	1	1	1	1
5	2	3	1	2
6	1	3	2	3
7	1	2	3	2
8	3	3	3	1
9	2	2	2	1

TABLE 3: CHARACTERISTICS OF INTERVIEW RESPONDENTS

Facility-based respondents – Nr. (%)		
Gender	Male	8 (35%)
	Female	15 (65%)
Years in service	<10	3 (13%)
	10-19	7 (30%)
	20-29	6 (26%)
	30+	7 (30%)
Profession	Nurse	6 (26%)
	General doctor	2 (9%)
	Clinical officer	1 (4%)
	Specialist	5 (22%)
	Health facility leadership	9 (39%)
Dual practice	Declared currently having dual practice	10 (43%)
	TOTAL	**23**
Policy stakeholders		
Gender	Male	12 (92%)
	Female	1 (8%)
Sector	Public/government	5 (38%)
	Professional associations	4 (31%)
	Private for-profit	3 (23%)
	Private not-for-profit	1 (8%)
	TOTAL	**13**

TABLE 4: SUMMARY AND CHARACTERISTICS OF BWS QUESTIONNAIRE RESPONDENTS

Health facility	**Overall n=128** Nr. (%)	**General practitioners n=31** Nr. (%)	**Specialists n=39** Nr. (%)	**Nurses n=58** Nr. (%)	
Age (years)[4]					
<30	10 (7.8)	7 (22.6)	0 (0.0)	3 (7.7)	
30-39	54 (42.2)	24 (77.4)	10 (25.6)	20 (38.5)	
40-49	36 (28.1)	0	17 (43.6)	19 (19.2)	
50+	28 (21.9)	0	12 (30.8)	17 (34.6)	
Sex[5]					
Male	46 (35.9)	19 (61.3)	25 (64.1)	2 (7.7)	
Female	82 (64.1)	12 (38.7)	14 (35.9)	56 (92.3)	
Years at facility[6]					
1-4	82 (64.1)	25 (80.7)	10 (25.6)	47 (61.5)	
5-9	11 (8.6)	4 (12.9)	6 (15.4)	1 (3.9)	
10-19	22 (17.2)	0	16 (41.0)	6 (23.1)	
20+	13 (10.2)	2 (6.45)	7 (18.0)	4 (11.5)	
					p-value[7]
Proportion holding second job[8]	47.6 (38.8, 56.5)	58.6 (39.5, 77.7)	92.3 (83.5, 100.00)	12.1 (3.4, 20.7)	0.000

[4] n=128; 0 missing
[5] n=128; 0 missing
[6] n=128; 0 missing
[7] A chi-squared test produced p-values for differences in proportions between cadres
[8] n=128; 2 missing

TABLE 5: BEST WORST PROFILE SCALING RESULTS

Attributes	**Relative impact**	**Levels**	**clogit coef.**	**Robust SE**
Salary	0.52	s1: 30% increase in government salary	-0.706**	0.06
		s2: 50% increase in government salary	-0.196**	0.06
		s3: 100% increase in government salary	0.902[0]	0.08
Dual practice	0.05	d1: Allowed, if private practice schedule declared formally to supervisor	0.023	0.07
		d2: Allowed, not required to declare private practice schedule	-0.090	0.07
		d3: Providers allowed to see private patients within government facilities	0.066[0]	0.08
Benefits	0.09	b1: Sponsorship for training for new skills every 3-5 years	-0.001	0.07
		b2: Overtime pay for work beyond 40 hours per week	0.268**	0.08
		b3: Government-sponsored accommodation	-0.268[0]	0.08
Work structure	0.34	w1: Part-time government contract	-0.028	0.09
		w2: Regular supportive supervision	0.543**	0.08
		w3: Stricter job monitoring by using clock-in mechanism	-0.515[0]	0.07
		Log pseudolikelihood = -2670.1451		
		Pseudo R^2=0.0446		

n=125

**Parameter is significantly different from zero at the 1% level

[0] p-value not calculated

FIGURE 1: SAMPLE BEST-WORST PROFILE SCALING TASK

For each of these questions, choose ONE policy option out of each set which you think is MOST IMPORTANT for policy-makers to include in a potential policy on dual practice in order to make things better for everyone.

And choose ONE policy option out of each set which you think is LEAST IMPORTANT for policy-makers to include in a potential policy on dual practice, in order to make things better for everyone.

Tick only ONE effect in the "MOST IMPORTANT" column and only ONE effect in the "LEAST IMPORTANT" column for each question.

Q2.1	Policy options	Most important	Least important
Salary	100% increase in government salary		
Dual practice	Allowed, not required to declare private practice schedule		
Benefits	Sponsorship for training for new skills every 3-5 years		
Work structure	Stricter job monitoring by using clock-in mechanism		

FIGURE 2: GRAPHICAL REPRESENTATION OF ATTRIBUTE LEVELS FOR THE ENTIRE SAMPLE (N=125)

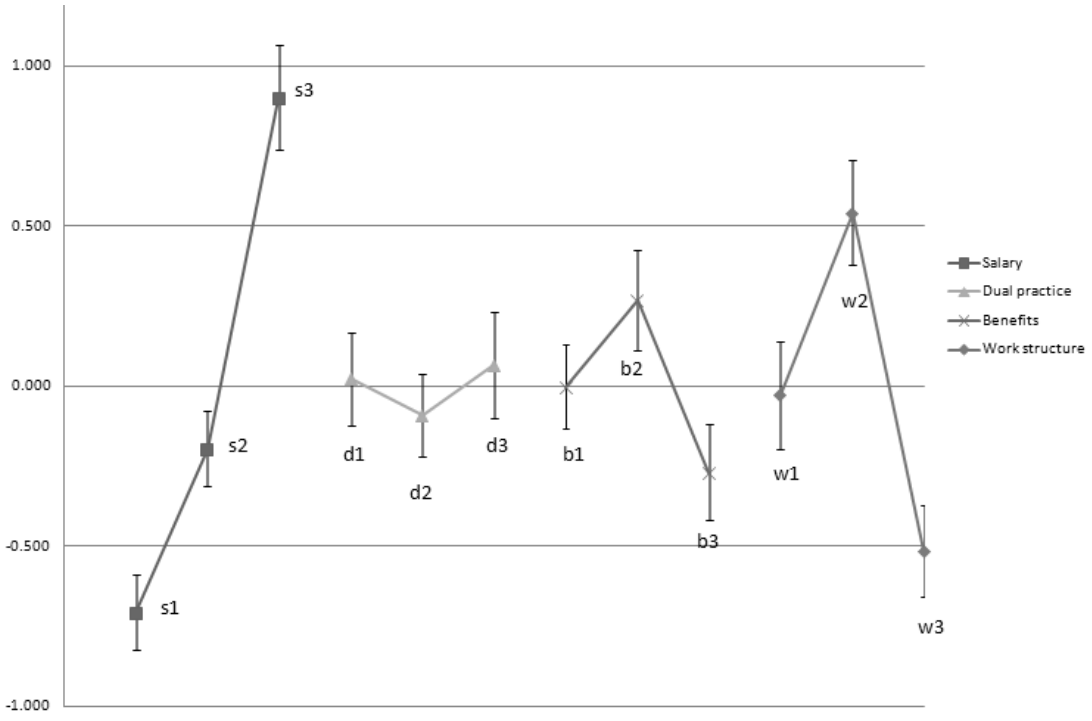
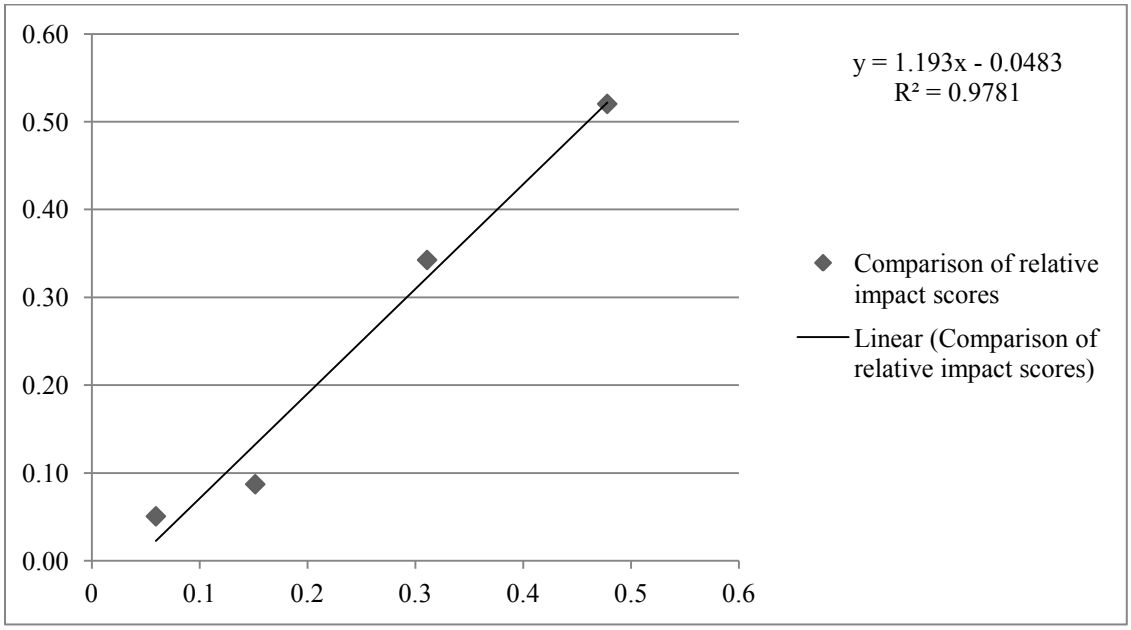


FIGURE 3: COMPARISON OF RELATIVE IMPACT SCORES



SUPPLEMENTAL TABLES AND FIGURES FOR MANUSCRIPT 4

TABLE 6: PRELIMINARY RESULTS FROM SUB-GROUP ANALYSES, COMPARING DIFFERENT CADRES (N=125)

Attributes	Levels	General practitioners n=30			Specialists n=37			Nurses n=58		
		Impact	**Clogit**	**Robust SE**	**Impact**	**Clogit**	**Robust SE**	**Impact**	**Clogit**	**Robust SE**
Salary	30% increase in government salary	0.67	-0.809**	0.12	0.41	-0.591**	0.12	0.52	-0.743**	0.08
	50% increase in government salary		-0.198	0.12		-0.217*	0.10		-0.189*	0.10
	100% increase in government salary		1.007[0]	0.18		0.808[0]	0.15		0.931[0]	0.12
Dual practice	Allowed, if private practice schedule declared formally to supervisor	-0.05	0.012	0.17	0.23	-0.352*	0.16	-0.01	0.239*	0.09
	Allowed, not required to declare private practice schedule		0.061	0.17		-0.217	0.13		-0.098	0.08
	Providers allowed to see private patients within government facilities		-0.073[0]	0.20		0.569[0]	0.17		-0.141[0]	0.10
Benefits	Sponsorship for training for new skills every 3-5 years	0.13	-0.077	0.13	0.05	0.068	0.12	0.09	-0.011	0.11
	Overtime pay for work beyond 40 hours per week		0.266	0.16		0.251	0.14		0.294*	0.12
	Government-sponsored accommodation		-0.189[0]	0.14		-0.319[0]	0.15		-0.283[0]	0.12
Work structure	Part-time government contract	0.25	0.121	0.16	0.31	0.181	0.17	0.40	-0.249*	0.12
	Regular supportive supervision		0.275*	0.13		0.443*	0.16		0.765**	0.13
	Stricter job monitoring by using clock-in mechanism		-0.396[0]	0.14		-0.624[0]	0.16		-0.516[0]	0.10
		Log pseudolikelihood = -658.2200 Pseudo R^2=0.0438			Log pseudolikelihood = -822.6479 Pseudo R^2=0.0487			Log pseudolikelihood = -1225.8211 Pseudo R^2=0.0545		
		Test[doctors=specialists=nurses] chi^2(16)= 36.82 Prob >chi^2=0.0022								

*Parameter is significantly different from zero at the 5% level; **Parameter is significantly different from zero at the 1% level; [0] p-value not calculated

TABLE 7: PRELIMINARY RESULTS FROM SUB-GROUP ANALYSES, COMPARING PROVIDERS WITH SECOND JOBS WITH THOSE WITHOUT SECOND JOBS (N=125)

Attributes	**Levels**	**With 2nd job (n=58)**			**Without 2nd job (n=65)**		
		Impact	**Clogit**	**Robust SE**	**Impact**	**Clogit**	**Robust SE**
Salary	30% increase in government salary	0.56	-0.669**	0.09	0.49	-0.741**	0.08
	50% increase in government salary		-0.238*	0.08		-0.171	0.09
	100% increase in government salary		0.908[0]	0.12		0.912[0]	0.12
Dual practice	Allowed, if private practice schedule declared formally to supervisor	0.09	-0.129	0.13	0.01	0.145	0.09
	Allowed, not required to declare private practice schedule		-0.060	0.11		-0.095	0.08
	Providers allowed to see private patients within government facilities		0.189[0]	0.16		-0.050[0]	0.09
Benefits	Sponsorship for training for new skills every 3-5 years	0.07	0.022	0.09	0.10	-0.023	0.10
	Overtime pay for work beyond 40 hours per week		0.219*	0.11		0.330*	0.12
	Government-sponsored accommodation		-0.241[0]	0.11		-0.307[0]	0.11
Work structure	Part-time government contract	0.28	0.211	0.13	0.40	-0.242*	0.11
	Regular supportive supervision		0.285*	0.12		0.791**	0.12
	Stricter job monitoring by using clock-in mechanism		-0.496[0]	0.11		-0.550[0]	0.10
		Log pseudolikelihood = -1243.0999 Pseudo R^2=0.0416			Log pseudolikelihood = -1372.4905 Pseudo R^2=0.0554		
		Test[with_dp=without_dp] chi^2(8)= 20.91 Prob >chi^2=0.0074					

*Parameter is significantly different from zero at the 5% level
**Parameter is significantly different from zero at the 1% level
[0] p-value not calculated

FIGURE 4: GRAPHICAL REPRESENTATION OF ATTRIBUTE LEVEL VALUES, BY PROVIDER TYPE (N=125)

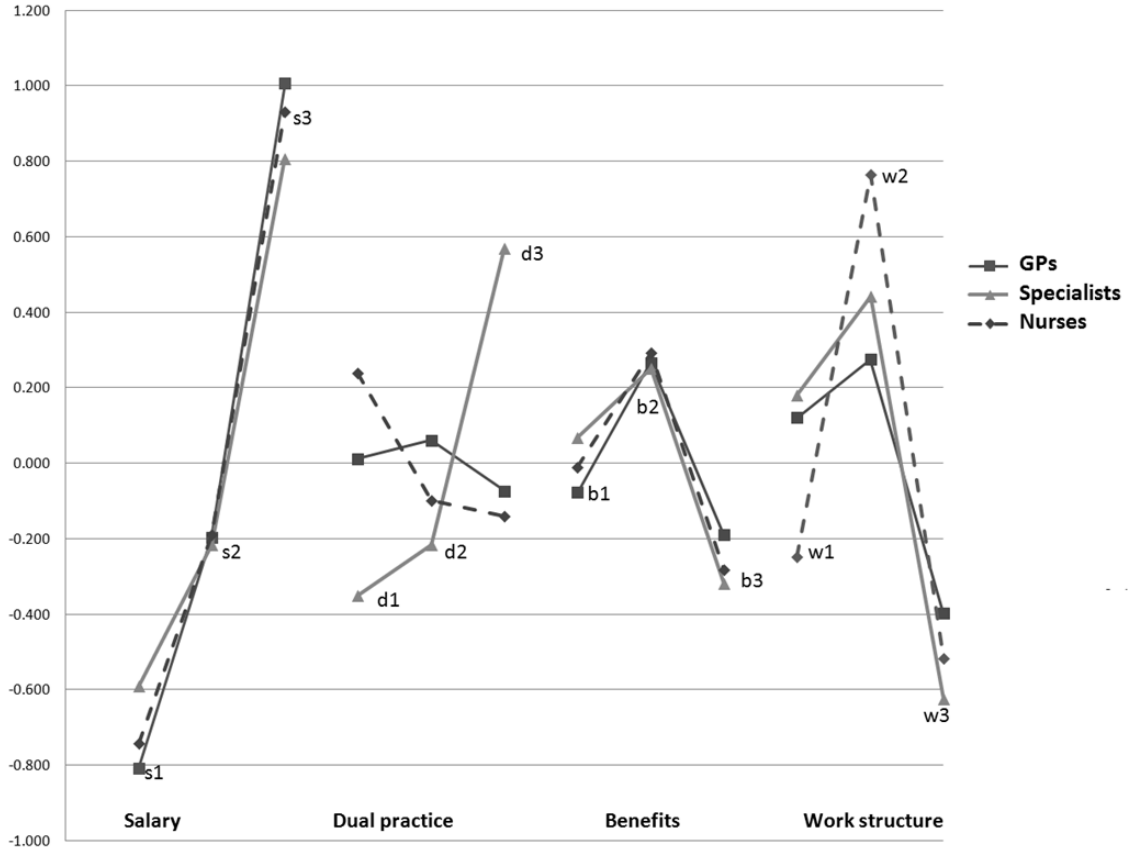
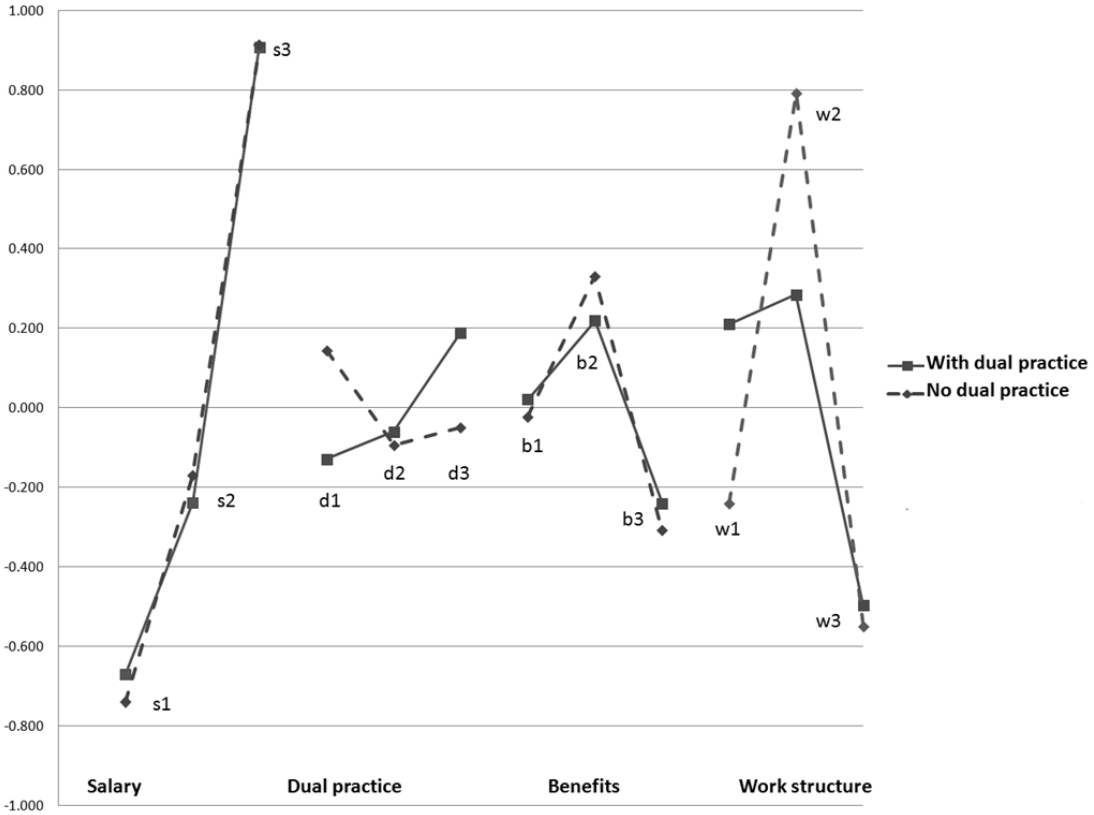


FIGURE 5: GRAPHICAL REPRESENTATION OF ATTRIBUTE LEVEL VALUES, BY DUAL PRACTICE STATUS TYPE (N=125)



CHAPTER 6: CONCLUSION

Dual practice in the health sector is widespread, particularly in low and middle income countries like Uganda. However, recent, empirical evidence on dual practice prevalence and its effects on the health system is rare. Moreover, although dual practice is believed to affect multiple types of health providers, the majority of the existing literature generally concerns dual practice only for physicians. Consequently, policy-makers often rely on anecdotal evidence and their personal perceptions for policy discussions and planning. Both health sector policy-makers and researchers have been recently expressed interest in dual practice, its effects on the health system, and related policy responses. Understanding how dual practice unfolds in a particular context is a key step in moving towards assessing the effects of dual practice on the system and any appropriate, context-specific policy responses.

To contribute to filling this gap in the literature, this thesis provides an in-depth understanding of dual practice policy and management practices in Kampala, Uganda. Previous studies examined dual practice from the perspective of only a limited number of health system actors. In contrast, this thesis used a mixed-methods approach to guide the exploration of this phenomenon in Kampala, Uganda for doctors and nurses, from the perspectives of health providers, health managers, and a variety of policy stakeholders. Combining qualitative and quantitative methods offers a more comprehensive understanding of dual practice in Uganda than either method would, if implemented on its own. This thesis not only provides the first in-depth study of dual practice in Uganda, but also an approach to guiding the development of dual practice evidence that can be adapted to other contexts as well. The remainder of this section summarizes the thesis findings and discusses related strengths, limitations, and policy relevance.

SUMMARY OF FINDINGS

The findings are presented in four manuscripts, aiming to answer to one of the following objectives:

- To develop an in-depth, multi-dimensional description of dual practice in Kampala, Uganda (Manuscript 1).
- To explore how dual practice evolved in the Ugandan health system and what formal and informal management practices emerged in response (Manuscript 2).
- To assess the preferences of public sector doctors and nurses for the consequences of dual practice (Manuscript 3) and dual practice policy elements (Manuscript 4).

Manuscript 1 presents an empirical, multi-dimensional description of dual practice in the Ugandan health system. The findings highlight the importance of developing a local, operational definition of dual practice for policy and management purposes, clearly drawing boundaries around what health and/or non-health activities are included and ensuring that all key stakeholders have a consistent understanding of these boundaries. The findings also show the benefits of systematically covering various measures of dual practice, such as a provider's level of effort or the income derived from additional jobs, and being able to compare those with the government job equivalents.

Manuscript 2 identifies the various phases during which dual practice emerged in the Ugandan health system and uses a causal loop diagram to illustrate key interactions and resulting system adaptation. Presently, dual practice is deeply embedded in urban Uganda, where the private sector and opportunities for dual practitioners continue to grow. Threatening to ban it creates unintended effects that compromise the supply of government health workers, particularly specialists. In the absence of a formal, government policy on dual practice, informal management practices developed within health facilities. These management practices do not vary among HCIII, HCIV, and hospitals, but rather between smaller and larger facilities and also, to some extent, based on the individual health manager's attitude towards dual practice. The various practices identified within facilities could serve as a series of uncontrolled tests for gaining further insights into facility-level management strategies.

Manuscript 3 uses qualitative data to identify a list of 11 positive and negative consequences of dual practice on the health system. From the quantitative questionnaire, the best-worst object scaling findings produce a ranking of providers' perceived dual practice effects. While the findings confirm the importance of financial incentives for individual providers, they highlighted the significance of facility-level effects, such as absenteeism and poor provider performance.

Manuscript 4 confirms that in the context of this study setting, multiple stakeholders perceive the need for a policy on dual practice or for a policy to address the public sector system's short-comings that drive providers to go into dual practice in the first place. None of the respondents suggested maintaining the status quo on dual practice or formally banning it. This study identifies policy options linked to each the following attributes: salary, dual practice policy, work structure, and benefits. Salary and work structure improvements were most important to respondents. These preliminary findings hint that differences in policy preferences might exist among providers – with potential differences arising between general practitioners, specialists, and nurses, as well as between providers who engage in dual practice and providers who do not. More evidence is needed on the costs of dual practice and the costs and benefits associated with potential policy options for dual practice.

IMPLICATIONS FOR POLICY AND PROGRAMS

Ugandan policy-makers grapple with a weak health system, where poor performance, low supply, and general maldistribution of government health workers persist. Dual practice is linked and potentially contributes to all of these issues – both positively and negatively. The issues related to dual practice transcend the boundaries of the health sector towards health professionals education, civil service reform, and the labor market. Because of its intricate links with both

health and non-health system issues, policy-makers should account for dual practice in policy discussions and planning.

Manuscript 1, in particular, provides policy-makers and managers the information necessary to begin understanding dual practice and its potential effects on the health system. As described in *Manuscript 1* and *Manuscript 2*, dual practice is an essential and engrained component of health workers' incentive environment. Furthermore, it creates synergies between the public and private sector – neither of which, alone, can fully meet the needs of Ugandan health providers or of Ugandan patient populations. *Manuscript 3* confirms that health providers perceive both positive and negative effects due to dual practice – at the individual, organizational, and system levels. Providers placed highest importance on individual benefits from the additional income, health system benefits from meeting unmet population demand, and negative effects at the facility level. *Manuscript 4* reveals local demand for a policy on dual practice – to make it more transparent and to provide health managers the tools to manage negative unintended consequences, which threaten to compromise government health workforce performance. The importance placed on work structure elements, particularly supervision, point to the need to improve public sector management and organization. Furthermore, this thesis outlines potential areas where policy-makers could intervene to meet the needs of government doctors and nurses. As described in *Manuscript* 2, some local management strategies already exist in the system, such as flexible scheduling arrangements, and could provide broader lessons for a policy on dual practice.

Nevertheless, designing an adequate policy response to dual practice would require further important information – for example about costs (of dual practice and of dual practice policy interventions), feasibility, and scale-up potential. Furthermore, many of the policy elements prioritized by our respondents could already be addressed through improved public sector management. For example, strengthening supervision, could be addressed through general health workforce policies and not only under the umbrella of dual practice.

While many respondents proposed demand for having a policy on dual practice, translating this into an actionable policy would prove complex. Completely removing dual practice does not seem feasible in the current environment and with current funding levels. On the contrary, a formal ban on dual practice threatens to compromise the already scarce supply of government health workers. Acknowledging dual practice and formalizing it would put policy-makers in a position to recognize important shortcomings in the public sector and therefore force accountability to shift priorities and investment. At the same point in time, ignoring dual practice in policy discussions risks missing opportunities. For example, our study also confirmed the existence of informal management practices for dual practice, in both the public and private sectors. These provide natural experiments and learning opportunities for examining how policies on dual practice change the incentive system for providers. Furthermore, interview respondents expressed their desire to make dual practice more transparent and to have the tools to regulate its negative consequences. Health managers in particular felt frustrated with the existing tools for supervision. Improving health workforce management at the facility level and opening the dialogue there about dual practice might be a good start to address this issue before longer-term investments are available for overall public sector management improvements broader health system reforms.

Whether or not a formal policy on dual practice in Uganda is developed in the short term, policy stakeholders nevertheless should raise the profile of dual practice in discussions of other issues that affect government health worker supply and performance, public-private partnerships, as well as the potentially transformational reforms that are currently discussed - such as the introduction of health insurance, performance-based financing, or civil service reforms.

In summary, based on this thesis' findings, Ugandan policy-makers should consider:

- Developing a locally acceptable definition of dual practice to use in policy and management discussions

- Maintaining an understanding of dual practice for multiple types of health workers, not just physicians. A one-size-fits all perspective risks not acknowledging unique, cadre-specific dual practice patterns.
- In the short-term, optimizing investments to improve the public sector working environment and supervision, as they also might have spill-over benefits to reduce the negative consequences of dual practice.
- In the long term, recognizing the increasingly mixed nature of health systems and the demand of the population for private sector services, in a situation where the supply of health workers is unlikely to grow – a reform of the civil service could consider more flexible employment arrangements and contracts for providers – particularly specialists.
- Evaluating policy pilots on dual practice, which could start with the management practice identified in this study, or other innovative approaches from Uganda and beyond.
- Bringing dual practice regularly in policy discussions – both inside and outside of the health sector – particularly those on the incentive environment for health workers, as well as those on potential reforms that would change health worker incentives.

Dual practice is relevant outside of the Ugandan context. The exploratory approach presented in this thesis could be adapted to produce in-depth profiles of dual practice in other settings as well. Furthermore, dual practice should also be linked to broader discussions on internal health workforce migration and on brain drain.

STRENGTHS AND LIMITATIONS

The sequential mixed methods design allowed us to incorporate the perspectives of multiple health system actors in the development of the preference elicitation exercise. Furthermore, it allowed for interpreting qualitative and quantitative findings together, adding additional layers for triangulation across multiple data sources and multiple perspectives. Several techniques were employed to ensure trustworthiness of the qualitative data. The

researcher established credibility and confirmability of the qualitative findings by triangulating the data from the interviews across multiple types of providers, and, where possible, through the document and policy review. To further ensure credibility – as the original thesis design involved two phases, the researcher took the opportunity to conduct member-checking during the second visit to Uganda. Engaging multiple investigators in the data collection and analysis further strengthened the quality of the findings. The doctoral researcher tried to overcome her biases and preconceived notions about dual practice by engaging multiple researchers and research assistants in the study, and maintaining memos documenting the evolution of this study.

Validity and reliability checks were added, where possible in the quantitative component design and analysis. All of the survey data was double-entered and the completion rates were very high. Multiple estimation methods were used to analyze the BWS data. This study represents the first instance when dual practice is examined through a complex adaptive system lens and that a CLD is used to illustrate how dual practice creates interactions and feedback in the health system. Additionally, this is one of the few times that dual practice is examined in-depth, from the perspective of both doctors and nurses, and the benefit of insights from multiple types of policy stakeholders.

Nevertheless, there are instances where our research design could not control for bias and some threats to validity and reliability exist. This study was conducted in an urban setting. Therefore it is unclear to what extent the findings would be generalizable to rural areas or even to urban areas where the private sector is different. Although the researcher aimed to be inclusive of multiple perspectives in our study, no demand-side respondents were included in this study. Additionally, the large hospital was much more complex than the other cases included in our study, and perhaps deserved to be studied in greater depth. While the qualitative component included some policy stakeholders from the private sector, further studies are needed in order to understand how dual practice is managed in the private (PNFP and PFP) sectors.

The BWS questionnaire allowed for the synthesis of stated preferences, but revealed preferences could not be explored. The convenience sampling technique used, as well as conducting the data collection solely during the day-time shifts created selection bias that likely influences the validity of the quantitative estimates developed through this study. The small sample size, as well as the limitations of the conditional logistic regression model prevented detailed stratified analyses.

The causal loop diagram development was completed after in-country data collection ended, and therefore, it was not possible to validate it with Ugandan experts – although the researcher triangulated the information presented in the CLD across all data sources available.

RECOMMENDATIONS FOR FURTHER RESEARCH

Future research could expand the understanding of dual practice to other types of health provider and beyond urban areas, and to the private sector (PNFP and PFP). Additionally, it could include the systematic exploration of the demand side on dual practice. In systems where gender plays a role in the workforce, it would be useful to reflect on dual practice through a gender lens. Further research on the individual's underlying scales associated with these perceptions, as well as linking the perceived effects with actual effects would add to the validity of BWS methods. Developing the evidence base on dual practice could also allow for the development and validation of indicators and variables to be used in economic models and simulations of dual practice (Gonzalez and Macho-Stadler 2013; Hipgrave and Hort 2013). Furthermore, rigorous empirical evidence on the effects of dual practice on the health system – in terms of costs and benefits – as well as on the effects of various policy initiatives would enable policy-makers to decide on where to invest limited health resources and what a policy on dual practice could include.

Additional research into how dual practice is managed by PNFP facilities and how PFP facilities incentivize and contract with their providers would be helpful. Networks appear to be

important in linking public providers to private facilities and in the context of the individual negotiations that take place in many facilities. A study of these provider networks or, alternatively, of the public and private facilities in which they operate would be interesting. A more in-depth study of the internal labour markets that form in large government health facilities could provide additional insights into dual practice opportunities and management practices.

Future studies could refine the best-worst profile scaling tool and implement it in additional urban or rural areas, with additional cadres, and include additional attributes or levels. Conducting similar experiments in other settings would provide opportunities for cross-country comparisons of policy options. For rigorous and valid sub-group analyses, larger samples of the cadres of interest are needed and additional statistical models should be explored. Policy analyses evaluating various policy initiatives would also be useful, particularly for establishing associated costs, effectiveness, and feasibility to scale-up, and have never been conducted before on the topic of dual practice.

Future research should consider evaluating the effects of dual practice on service delivery and the effectiveness of policy pilots. In addition to being important to health policy discussions on health workforce issues, studying dual practice in health provides an opportunity to better understand how public and private sectors interact within pluralistic health systems. For example, studying absenteeism and ghost workers in the public sector without considering dual practice is inadequate in contexts where dual practice is prevalent. Future studies should focus on the effects of dual practice on the *distribution* and *performance of the health workforce*. While the imbalances between urban and rural areas have been a topic of many discussions in the literature, more attention should be provided to the dynamic exchanges and imbalances between public and private sectors, such as for dual practice.

CONCLUSION

Although, in some contexts, more than half of government workers share their time across sectors, workforce planning discussions generally do not account for dual practice. Policies for recruitment, health workforce projections, and health worker benefit packages rarely, if ever, consider dual practice. This thesis provides an in-depth description of dual practice in Uganda and makes the case for raising the profile of this phenomenon in health workforce policy and planning.

The findings highlight the importance of consensus on a local definition of dual practice, of documenting the various dimensions of dual practice, as well as of understanding the complex patterns of its development in a system. They underscore the importance of broadening the interest in dual practice beyond that of physicians and examining both formal and informal policies and management practices within health facilities. The best-worst scaling methods provide an alternative approach to incorporating providers' perspective in policy discussions about dual practice, incentives and provider performance. Provider preferences on the consequences of dual practice, as well as on policy options related to dual practice point to public sector management improvements – such as improvements in supervision and overall working environment – that could be implemented in the short-term. More evidence is needed for the development of a longer term plan for addressing dual practice in the health system – both to leverage potential opportunities and to mitigate possible unintended consequences.

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APPENDICES

APPENDIX 1: QUALITATIVE PHASE IN-DEPTH INTERVIEW GUIDES

In-depth interview guide for health providers

Thank you for agreeing to talk with me, and for your participation in this research. The purpose of the project is to provide an understanding about dual practice (or dual employment/multiple job holding) in health - i.e. doctors and nurses who are civil servants, but hold multiple jobs – health and/or non-health). We are seeking to understand dual practice holistically - from the individual, facility, and policy-maker perspectives - across both public and private sectors. I will first ask you questions about your personal experience, and then move on to broader questions about the organization you work in and policies on human resources for health.

1. Please begin by telling me how long you have been in service and how long you have been at this facility.
2. What is a typical day at your job like?
    a. How many patients do you think come to the clinic each day? How many are you responsible for?
    b. How many other people are usually working with you?
    c. How frequently do you receive supervision from someone in your own facility? Someone either at district level (KCC) or MOH
    d. What is your work environment like – infrastructure, supplies, and equipment)
3. Besides working at this facility, have you ever had any additional jobs? Do you currently hold any additional jobs now?

4. <u>If you don't currently have additional jobs:</u> Have you ever had or considered taking a job in addition to your current one [private for-profit or private not-for-profit or both; health or non-health or both]? If so, why *[e.g. financial reasons, promotion prospects, professional development opportunities, prestige, maintenance of skills, work environment, other reasons etc]*
    a. Do you think you'll engage in dual practice in the future? Why or why not?
5. <u>If you have one or more additional jobs [if you do not have additional jobs, please answer based on what you think your colleagues do]:</u> What type of additional jobs do you [or your colleagues] currently have *[health sector: private for-profit, private not-for-profit, or both?; non-health sector]*

    a. How did you obtain these jobs? (e.g. former classmates, co-workers, recruiters)
6. Could you compare and contrast your additional jobs with your job at this clinic/hospital?
    a. Please describe the location of your additional jobs, relative to the public sector clinic and relative to their house;
    b. Describe your schedule for a typical week: hours worked per day/per week;
    c. Please describe what types of services you provide – how do these differ from your public sector job;
    d. Please compare patient characteristics; policies for the poor; work environment; team composition]

7. What were the main reasons why you took on additional jobs? *[e.g. financial reasons, promotion prospects, professional development opportunities, prestige, maintenance of skills, work environment, research opportunities - other reasons etc]*
    a. At what point in your career did you decide to take on an additional job? **listen for changes in work environment; national level policies such as user fee removal**

8. What are the reasons why you remain in your public sector job? [see probes for previous question]
9. Can you describe to me the kind of challenges or difficulties that holding two or more jobs creates for you or your colleagues? *[absenteeism; shift sharing; managing large patient loads; patient referral from public to private and vice-versa; family life, professional development, work ethic]* Productivity *[# of patients; # of services provided]*
    a. Who is in charge of creating the duty roster at your facility?
    b. What happens if you need to change your schedule because of illness or your other commitments?
    c. How do you cope with a situation in which you cannot change the schedule or there is no one else around to negotiate this with?
    d. How do you negotiate your schedule to ensure that you can manage holding multiple jobs?
    e. How do you negotiate your patient load to ensure that you can finish your work in time?
    f. What happens if you [or your colleagues] do not finish working with your patients at this facility, but have to go to your second job?
    g. How do you collaborate with your colleagues throughout this – or other docs/nurses, as applicable?
10. Can you describe to me the kind of challenges or difficulties that holding multiple jobs creates for this health facility? *[Productivity [# of patients; # of services provided]; Quality of care; Financial and physical access to services to socio-economic groups (poor)]*
11. Can you describe the main advantages or benefits related to holding multiple jobs for this health facility? *[retention; technology transfer; max use of rare skills; collaboration with peers]*
    a. What is your facility in-charge's or director's opinion on these benefits?
12. What is the facility in-charge's or director's perspective on dual practice?
    a. Please describe any policies (formal or informal) on dual practice at the facility level and how they have changed over time.
    b. What is your facility in-charge's or director's opinion on the challenges and benefits of dual practice?
    c. Has anyone in this facility or at your other job(s) ever asked you whether you hold additional jobs?
    d. When your in-charge/director/supervisor finds out that someone has an additional job, how do they handle it and what do they do?
    e. What happens when your in-charge/supervisor needs you or colleagues that are working additional jobs and cannot find you there?

f. What percentage of your co-workers has additional jobs?
   i. How do the opportunities to work in the private sector differ between doctors and nurses? [As applicable, also ask how these opportunities differ among doctors and among nurses]
   ii. How do the opportunities to work in the private sector differ between men and women?

g. Does your supervisor know about your (or your colleague's) second job (public and private sector)?
   i. **If yes,** how did your private sector employer feel about hiring you?
      1. Did you disclose all your jobs or any other information about them?
   ii. **If no,** what would happen if he would find out?

13. What are your thoughts about how policies or management procedures on having multiple jobs could be changed to make things better for everyone?
    a. At the facility level
    b. At the national level
    c. If you had the opportunity, what would you recommend to policy-makers on the regulation and management of dual practice?
       i. What are the main elements that you think policies should address *[e.g. financial reasons, promotion prospects, professional development opportunities, prestige, maintenance of skills, work environment (supervision, infrastructure), dual practice opportunities; research opportunities - other reasons]*
14. Do you have any other thoughts or suggestions on this topic? Or any other items you would like to mention that did not come up in our discussion today?

- Would you be willing to speak to me again should I have any follow-up questions?
- Would you like to be contacted by e-mail when study publications become available?

In depth interview guide for health managers

Thank you for agreeing to talk with me, and for your participation in this research. The purpose of the project is to provide an understanding about dual practice (or dual employment/multiple job holding) in health - i.e. doctors and nurses who are civil servants, but hold multiple jobs – health and/or non-health). We are seeking to understand dual practice holistically - from the individual, facility, and policy-maker perspectives - across both public and private sectors. I will first ask you questions about your personal experience as a health facility manager, and then move on to broader questions about the organization you manage and policies on human resources for health.

1. Please begin by telling me how long have you been in service and how long you have been working at this facility/in Kampala?

2. What is a typical day at your job like?
   a. How many patients do you think come to the clinic each day? How many is each nurse/doctor usually responsible for?

b. How many other people are usually working with you?
c. How frequently do you receive supervision from someone in your own facility? Someone either at district level (KCC) or MOH
d. What is your work environment like – infrastructure, supplies, and equipment)

3. Based on your experience, are you familiar with public service providers holding additional jobs?
    a. What proportion of health workers at this facility, in general do you estimate hold additional jobs?
    b. Could you tell me more about who these are *(e.g. Doctors –Nurses? Clinical officers?)* and their characteristics *(e.g. senior, junior, specialists vs. general)*
    c. What type of additional jobs do they do?
    d. How do you think they get connected with these additional jobs? *[health vs. non-health; PFP vs. PNFP]*
    e. Where are their additional jobs located?
4. What are the main reasons for taking additional jobs? *[e.g. financial reasons, promotion prospects, professional development opportunities, prestige, maintenance of skills, work environment (supervision, infrastructure), research opportunities – other]*
5. What are the main reasons for keeping the public sector job?
6. How did you find out about the additional jobs that providers hold?
7. Can you describe to me the kind of challenges or difficulties that holding multiple jobs creates for this health facility? *[Productivity [# of patients; # of services provided]; Quality of care**;** Financial and physical access to services to socio-economic groups (poor)]*
8. At your facility, how do you manage providers holding multiple jobs?
    a. How do you think this compares with how other health facilities approach dual practice? *(include other public facilities; other PNFP and PFP*
    b. How do you create the duty roster at your facility?
    c. What happens if doctors or nurses need to change your schedule because of illness or your other commitments?
    d. How do you cope with a situation in which you cannot change the schedule? If so, what do you recommend to the health workers?
    e. How do health workers negotiate their schedule to ensure that you can manage holding multiple jobs?
    f. How do you ensure that all the patients that come here are attended to?
    g. What happens if there are still patients to be seen at this facility, but providers have to go to their second job? Why?
    h. How do you collaborate with your colleagues throughout this – or other docs/nurses, as applicable?
9. How do you think doctors and nurses manage holding multiple jobs?

10. Have there ever been any problems related to dual practice? Any "critical incidents" that you had to resolve at your facility? If yes, please describe.
    a. Have you heard of such incidents in other facilities in Kampala?

11. Can you describe the main advantages or benefits of health workers' multiple jobs for this facility? *[retention; technology transfer; max use of rare skills; collaboration with peers]*
12. What mechanisms or options do you have at your disposal to control or influence dual practice? *[support from your peers; other facilities/your district team]*
13. If you had the opportunity, how would you change how the health facility management responds to dual practice?

14. What are your thoughts about how policies or management procedures on having multiple jobs could be changed to make things better for everyone?
    a. At the facility level
    b. At the national level
    c. If you had the opportunity, what would you recommend to policy-makers on the regulation and management of dual practice?
        i. What are the main elements that you think policies should address *[e.g. financial reasons, promotion prospects, professional development opportunities, prestige, maintenance of skills, work environment (supervision, infrastructure), dual practice opportunities; research opportunities - other reasons]*
15. Do you have any other thoughts or suggestions on this topic? Or any other items you would like to mention that did not come up in our discussion today?

If respondent seems willing to speak about his/her experience, ask the following*

1. Have you ever considered working in the private sector? Why or why not?
2. Do you currently have any additional jobs? *[Have you ever worked in the private sector]*
3. What type of work do you do in the private sector?
    a. How often do you go there OR how much time do you typically dedicate to your private sector job? *(how many hours per day or days per week, weekends?)*
    b. What types of patients do you see?
    c. How long have you worked at this job?
    d. Where is your job located?
    e. Have you worked in other private settings? How do they compare with your current private sector job?
4. Please describe a typical day when you work both in the public and private sectors?
5. What were the main reasons why you took on a private sector job?
    a. What are the characteristics that you value most in your private sector job?
6. What are the main reasons for staying at your public sector job?
7. How do you manage holding these two jobs?

- Would you be willing to speak to me again should I have any follow-up questions?
- Would you like to be contacted by e-mail when study publications become available?

In depth interview guide for policy-makers & other stakeholders

Thank you for agreeing to talk with me, and for your participation in this research. The purpose of the project is to provide an understanding about dual practice (or dual employment/multiple job holding) in health - i.e. doctors and nurses who are civil servants, but hold multiple jobs – health and/or non-health). We are seeking to understand dual practice holistically - from the individual, facility, and policy-maker perspectives - across both public and private sectors. I will first ask you questions about your personal experience as a policy maker, and then move on to broader questions about the broader policy issues in human resources for health.

1. Please begin by telling me how long you have been in your current position and what your role is regarding health workforce policy and management in Uganda?

2. As mentioned earlier, the goal of this research is to better understand the management of dual practice. From your perspective, how do you define dual practice/set boundaries around it? *(which providers; health/non-health activities)*

    a. How do you think second jobs in the health sector are different than second jobs in the non-health sector?
    b. How widespread to you estimate dual practice to be among nurses? How does this compare with doctors or other cadres?

3. Why do you think that public sector [nurses] take on additional jobs?*[e.g. financial reasons, promotion prospects, professional development opportunities, prestige, maintenance of skills, work environment (supervision, infrastructure), research opportunities – other]*
4. If you know, where do they work? What kind of jobs do they mostly take? Do you have any data on dual practice/multiple job holding among nurses?

5. Can you describe to me the kind of challenges or difficulties that holding multiple jobs creates for health service delivery? *[Productivity [# of patients; # of services provided]; Quality of care; Financial and physical access to services to socio-economic groups (poor)]*

6. Can you describe the main advantages or benefits related to holding multiple jobs for health service delivery? *[retention; technology transfer; max use of rare skills; collaboration with peers]*

7. What are the current policies on dual practice in Uganda? *[could also bring hard copies of the policies that I have gathered so far]*

    a. Your organization vs. national-level
    b. Whose responsibility is it to oversee the implementation of these policies?
    c. Who was involved in the development of the current policies on dual practice? Have you ever been involved in discussions on dual practice - if so, explain.

d. How are the current policies enforced/regulated?
    i. What is the role of health facility managers, professional councils, PNFP and PFP actors in this?
e. Do you know of any examples where these policies have been enforced? Or, alternatively of critical incidents or instances when they were not enforced?
f. What are the main challenges for the enforcement of current policies?
g. If you had the opportunity, how would you change how the health facility management and your organization response to dual practice?

8. Should dual practice be regulated? Why, or why not?

9. Which organizations should regulate dual practice, and why? What role do you think your organization (the nursing council) should play in the regulation of dual practice?

10. What other information do you think these organizations need in order to make an informed policy on dual practice?
    a. How do you think your organization should contribute to the regulation/ management of dual practice?
    b. What are the main elements that you think a dual practice policy should address? *e.g. financial reasons, promotion prospects, professional development opportunities, prestige, maintenance of skills, work environment (supervision, infrastructure), dual practice opportunities; at research opportunities - other reasons etc]*

11. Do you have any other thoughts or suggestions on this topic? Or any other items you would like to discuss that did not come up in our discussion today? Anyone in particular we should add to our list of respondents?

12. Do you know of any other studies or data on dual practice that we should be considering? (if he said that he has data - ask if we can access it - also any written policies or memos on dual practice would be helpful)

- Would you be willing to speak to me again should I have any follow-up questions?
- Would you like to be contacted by e-mail when study publications become available?

APPENDIX 2: QUALITATIVE DATA ANALYSIS – FINAL CODING SCHEME

Category	Definition	Examples
Individual motivation		
Respondent background	Summary of respondents' introduction - specifically - years in service/years at a particular facility.	P16: R: 12 years I: 12 years. Ooh, it's quite some time. And you've been here all this time? R: (...), yah, all this time I: Ok R: I have been here, just moving in and out. Possibly for just small courses, 3 months, but coming back
Attitude towards dual practice	Respondents' perspective on why they never engaged in dual practice; 11/21/2012 or a respondents' perspective about whether dual practice is "right" or "wrong"	P10:17 "R: I think am one really who has taken my work as a priority; because as far as health is concerned we are supposed to be here by 8am, leave at 5pm, you may have a plan but I have not taken it up to start another job immediately because, the time is not there. You can do little jobs at home, but not really taking a job to earn more money. Me personally because I fail to get time."
Motivation (doc)	Discussion of financial and non-financial reasons why doctors engage in dual practice - areas where the public and private jobs are directly compared (for example in terms of working environment) is to be coded under provider motivation - as the working conditions in private settings might be a motivating factor for taking, keeping, and performing in a private sector job	P9:41 "R: One of the reasons is that you accept that the conditions under which we are working are not that favorable, leave alone the conditions but the work load, among the conditions; the work load, the work load, the remuneration and then the salary. I will give you an example, here in [...] we have this organization; infectious disease control that is offering services in Anti Retrial Viral Therapy, the doctor there gets almost twice or thrice compared to me but we are all seeing the same clients and there are here Monday, Tuesday and Thursday yet for me am here Monday to Friday. Monday to Friday, I can't say am working 8hrs a day sometimes I work for more than 12 hrs because you come at 6am to operate, you transfer and leave this place at 10pm"

Category	Definition	Examples
Motivation (nurse)	Discussion of financial and non-financial reasons why nurses engage in dual practice - areas where the public and private jobs are directly compared (for example in terms of working environment) is to be coded under provider motivation - as the working conditions in private settings might be a motivating factor for taking, keeping, and performing in a private sector job	P3:13 "R: Yes in private at some point, you know very well that the money for the government is not enough (someone knocks on door), so I worked in private for sometime"
Perceived motivation	In-charge or policy stakeholders' perceptions for why health workers engage in dual practice **10/16/2012 also includes perceived motivation from providers who do not engage in dual practice, but discuss how they perceive their colleagues' motivation for DP.	P21: But we also know that physically and psychologically whatever, if affects performance of a person. You know that these people need rest. Yea, but we can't stop them, and I think the main cause behind this is that they are trying to improve their earnings, our wages are low, very low, and most people find it very difficult to sustain their family on these wages, so they are forced to take on a second job to beef up their earnings.
Address	In vivo description of part of the motivation for doctors and nurses to stay in the public sector	P3:27 "one wants an address"
Public sector motivation	Reasons why doctors and nurses want to maintain a public job	P2:96 "R: Eeh, because you know, they will say; there's pension. They say; let me remain here, when my pension comes, I will go and then continue getting that ka pension. There's Security here, more than the other side, yah. There used to be, but now I don't know. Hmmm, the security bit of it is what maintains them to keep this job; they don't want to lose it. I fact if they are found out, they choose to come back. Hmmm, I've known of one who has gone, but she has gone to another, aah district, but since she's in government…hmmm "

Category	Definition	Examples
Organizational policy and Management		
Supervision	Description of supervision or lack thereof in facilities	P16: R: Rare, yah it's a rare thing (laughs). Really we don't have people, super, ok really having supportive supervision. Aah, from, from the people above us. But as for me, I'd really expect a senior consultant, but there's also not really supervising, but we can consult them for some issues. Consult them I: Hmmm ok,Visits from the ministry of health are very rare R: Unhmm, very rare
Org. attitudes and culture	The facility leadership perspectives on dual practice and how open the organizational culture is to discuss dual practice	When asked whether the respondent's supervisors know about his or her dual practice P17: R: No, you are the first person to ask me. But they know! I suspect they know. Yes. Hm. I: But it's informal, so nobody gets up to ask? R: No, mmm, mmm, I suspect they know. (laughs) who goes where, and you know. They know!
Org. policy	Policies that were at one point or another proposed in the facilities studied; include both formal and informal rules	P1:89 "R: Well, after the, after finding out, they were warned, yah, they were warned. Infarct they were advised to decide between the two; whether they take up the other job, or they take up this one. So most of them decided to leave the other one and, yah, and they're working now, hmmm"

Category	Definition	Examples
Org. policy pitfalls	Why policies on dual practice failed, or why they are assumed to fail, or what unintended negative consequences arose out of formal or informal organizational policies	P1:178 " I: So what mechanisms or options do you have at this facility, at your disposal to control, or influence dual practice? R: Hmmm, controlling it, for us we, we have, attendance list I: Ok, attendance list, yes R: Attendance book, so whoever reports on duty, you sign, so that we know who was on duty, and who was not. But still that doesn't, doesn't help you, because I've established here, that people I put on night duty, one comes, and signs for the other. Because it's the same hand writing "
National policy and regulation		
National policy existence	Respondents' view on whether there is a policy or not, and also the source of the policy (e.g Presidents' office; Standing Orders etc.)	P6:95 "R: For the policy has to change - there should be a policy first"
National policy interpretation	Respondents' perspective on whether there is a policy or not (this could be either formal or informal).	P10:87 "R: what I know is that if you are from government and you have another government job that is not allowed I: So no two government jobs R: No two government jobs that is not allowed."
Non-Ugandan policies	Policies that other countries have implemented and that are alluded to by respondents - intended to capture both the policy and any potential discussion about its success and relevance to Uganda.	P5:59 "R: I've seen it in the UK, eh, in this national health ... whatever, the hospitals. I knew some radiographers were employed to do to work half day. And even some units, you find where you do not - you do not need so many radiologists, you have a part-time radiologist who can come in like to report mamography, you know that someone is specialized in that. You come in, every afternoon, just to report the mamo films. Just like how the private practice here does, I mean you come in to clear the work, they do the administrative work, you find everything in place, you know, and and then you spend less time, but your output is quite a lot. Yes."

Category	Definition	Examples
Other health workforce policies	Other health workforce policies that indirectly have an impact on dual practice. For example, the Public Private Partnership Policy proposes secondment of government personnel to PNFP facilities) *Note: the PNFP sector is included under the same umbrella as the public sector because there is a lot of cooperation between the two (e.g. secondment of staff, some budgetary transfers etc.)	P9:43 "one if they increased say the salary from 200000/= to 400,000/= you may find that they tax around 50,000/= but they advert will be we have increased the salary of health workers that alone to me is a very very big problem; one it lazes the social income of the health worker by the community so the community and dependants increase expectation from the health workers yet the actual amount received is less so this causes some of the problems; because people have to go out and top up to meet the community expectations."
Position on Dual practice (1 5 13 changed from Stakeholder positions)	Respondents' organization's perspective on dual practice (e.g. Uganda Medical Association President is not for disorganized dual practice; professional organizations' perspectives) broadened out to also include when respondents describe the role of their organization in the management of dual practice.	P23: 93 "I: Okay we have done our part; one of the functions of the council is to inform government on issues that relate to the public sector or the health service generally. So I told you after doing an inspection and we found multiple clinics belonging to one person we have curbed that one so that it will not happen in Uganda again. Two those ones where the government has control, to……. To government so far the previous council presented to the government and recently we sent to the president the salary structure which we got in other countries and innovations they came up with aa…… They didn't eee….. we said okay, so now these analyses I gave them to the minister since we have people behind us and this one is very small, we are in contact with ministry actually from human resource and what ever, I don't know what she is thinking about it, she is one of the people we have, those who are technical and he is also…….. So our job is actually to advice government and we do….. a lot but sometimes government delays. Those that are within our conformity, we...We…we do what, we decide and put them into action and we implement immediately. But for the policy we leave that to government because we have given them adequate information."

Category	Definition	Examples
Policy elements	Respondent's suggestions for DP policy, including structure and policy characteristics (e.g. transparent), as well as specific policy elements (e.g. a clock-in system). It will be important here to examine patterns in suggestions that stem from the different stakeholders and respondents involved in this study. This includes discouraging dual practice (e.g. if respondents think that providers should only have one job).	P2:208 " R: Professional development, long ago people used to take people who are hard working. Take her for further studies, these days we don't, hmm. And you fear, aah. People would emulate other would say, eeh, this one worked hard, they took her for
Policy enforcement	Respondent description of whether and how a policy on dual practice was enforced.	P17: R: Ah, there are many many people who have got into trouble, but I am not going to speak for them. There are many people who have got into trouble.
Policy discussions	Mention or description of policy discussions on dual practice of which they had heard - or in which they have participated.	P22:42 "R: I was working with the University, and the commissioners at the University are totally different, because when people have taught two lectures per day, they feel like they have done enough - and then part of the rest of the - on the ward round. Another time they have days or times when they are doing a clinic. So it is pretty difficult to work out. But I am certain that is government or university were willing - there is no reason why a person teaching at [...] university can't go an work and teach at [another] university and make his time available to all of them and get the satisfaction."
Dual practice characteristics		
Definition	How dual practice is defined - also includes elements that might become relevant in developing a typology for dual practice.	P1:33 "dual practice, I think this is aah, when somebody has two jobs. I'm just suspecting, but I think that is what I think. It's when one has two jobs, which is, I think, very common among our health workers"
Kyeyo - part time job	In vivo code to denote how Ugandans refer to dual practice in their local language - Luganda	P2:84 " Some of them were like if they pay me, me I will not go back to kyeyo"

Category	Definition	Examples
Description of private employment	The dual practice typology will draw from the code on " description of private employment" - the write-up and eventual typology will include elements such as: 1. Time commitment 2. The time of day when someone goes for additional jobs 3. Any information on dual earnings 4. Thoughts on the location of private employment 5. General discussion of opportunities for health and non-health sector employment (e.g. what types of dual jobs people hold (drug shops, private clinics/farming) 6. Type of services that are provided (radiology reading, vs. surgery, vs. general outpatient care) 7. Specialist vs. general services - scarce vs. not scarce 8. Benefits and allowances associated with private job. Note that these elements will be distinguished, where possible, by health and non-health dual practice.	P2:66 "They go for the same jobs, health. She gets a job in another clinic, or she makes her own clinic, which she needs to attend to also."

Category	Definition	Examples
Dual practice variation	Respondents' explanations for how dual practice might differ by specialty; or between doctors and nurses.	P2:60 "I: Hmm. Ok, So, is it more of doctors, is it more of nurses that normally hold more than one job? R: Both, all of them I: All of them. I: Ok, and does it, like is it more of the seniors, the juniors? R; No, it depends on anyone's personality. Someone will need a, and she rushes to have another job"
Critical incidents	Descriptions of incidents related to dual practice, related anecdotes, and manager response to a specific situation.	P2: 144 "R: There, if she talks to you, but normally, the problem is (...), these people, government people are not rules. Sometimes she may even not tell you. She can either absent herself, or arrange with her friend. She ends up saying; we are not coming, you come and work. I: Eeh, so if she doesn't tell you and doesn't arrange with friends, what happens? R: She doesn't come, she doesn't come, coz when i had just come, there was a scenario when there was no one on night duty. Hmm, there was no one, I was, there was a child activity, and I was a supervisor, so I came late around seven. I didn't find anyone. And no one will, so I said; where is ... Aah, even last night she didn't come"
Estimated prevalence	The respondents' perception on how widespread dual practice is. Could be an estimated percentage - or even broader estimation (i.e. without specific numbers in mind)	P1:47 " initially, aah, it used to be almost half of the staff we had, had dual practice"
Dual practice advantages	Perceived benefits of dual practice	P1:150 "R: Well, aah, maybe the benefit, the major benefit I'd say, there's better, you improve on your income, like you're earning on both sides. You're earning from the private and also…"

Category	Definition	Examples
Public vs. Private	When an individual is approached re: dual practice and is asked to make a choice between public and private - also includes perspectives on whether they might still have private job after choosing to stay in public. 1/5/2013 Also includes a discussion on the relative priority of public and private work (i.e. if a provider is perceived to give more attention to their private vs. their public job)	P1: Infarct they were advised to decide between the two; whether they take up the other job, or they take up this one. So most of them decided to leave the other one and, yah, and they're working now, P2:76 "R: Hmm, some of them, because I know of a person who is an in charge in Arua, she works in our health centre here. He's an in charge, he's always away. He works in a health centre in KCC, so he's always away, he comes when he wants, you know. And the problem is when they have those additional jobs, especially when they are working for the government, they make sure the additional jobs are well attended to, yes. They never miss there I: The second job is well attended to? R: Is more, prioritized according to them, so this one they just come coz it's a government job"

Category	Definition	Examples
Consequences of dual practice - and policy concerns/policy problems		
Challenges to health facilities	Refers to the hardships that health facility managers deal with in response to their providers working multiple jobs. 11/26/2012 changed this to Challenges to leadership to capture the issues the stakeholders mention in managing dual practice - not just facility in-charges. 12/11/2012 - combined this code with "organizational performance" so that it also includes broader organizational consequences and challenges.	P1:41 " so you find that the midwife is supposed to be on duty here, morning shift, and then at the same time, in Mengo hospital, she's supposed also to be on duty, morning time, so it becomes difficult for her. So what she does, she decides to abandon the government job and she goes (baby cries) to work in the private hospital, coz the private hospital, they pay them better than government. And you know, the way government works, they don't follow up people so much, they are not very strict on people, like in private hospitals;"
Challenges to providers	Refers to the hardships that individual providers face due to working multiple jobs. 12/11/2012 Also describes how dual practice affects provider performance. (deleted provider performance)	P1: Patients suffer, and then they, some of them when they come to work, know they, they're very rude to patients; they don't perform as they are expected. Some of them don't keep records, they don't, you know, they don't keep records. They don't treat patients the way they're supposed to be treated, so they offer, they quality of service that they offer is not good, coz sometimes they do things when they're in a hurry, coz they've to go and work in the private sector where they're paid better. And these very health workers who behave like that, when they're in the private, private practice, private hospitals, they, they're perfectionists.

Category	Definition	Examples
Patient care	Perceived effects of dual practice on patient care	P1:79 " they were getting reports. Like the patients could come up and queue up for a long time. They were not being attended to very fast, because most of the health workers who were supposed to be here were working somewhere. So, some of them could not show up at all, so the patients were complaining. "
CAS phenomena		
Networks	Networks around how someone got their dual job position or how they cope with dual practice	P6:47 "R: The only units that I'm aware of that has good collaboration is radiology. That one they collaborate very well because they have one unit outside where they all work. But see, where they don't collaborate very well, you might find one is in this unit, another one is in a totally different unit whose schedules are different. So it's very difficult for them to collaborate. I: Oh, so, but the radiologists, they all do their private practice in one place? R: In one place. Yeah. And they own it. So I hear (laughs). So they have a common interest, common shares, so that's why it is much easier for them to collabroate very well. And like what I hear here, they have different placed they go to, so ... "

Category	Definition	Examples
Self-organization	Emerging structures and relationships as providers cope with growing dual practice	P5:25 "R: Yes, we have. And um, we tried to create a bit of flexibility and say, ok, all of us must be on station in the morning, and let's take turns to cover the evening. Ok? And maybe trying to bring the evening time a bit forward to, to allow people to earn some extra earning. Because we know what we earn from the hospital probably would not sustain most of them. But, and indeed, at the end of the day we find the output is really a mess. If you have - just like now we have a few radiologists - and they are doing film reporting together with the SHOs, reporting CT scans, over 30 scans every day. I mean, at the end of the day when all this outputs - when I see the outputs then I don't complain. Yes. And sometimes they come and start early before 8 o'clock and if someone is here by 7, and even comes back on the weekend to clear if there is any backlog, I think really, I can only say thank you because I can't pay them more than they earn. But I know their output is really really a lot."
Moral dilemma	A sub-category of the challenges to providers code, but did not want to combine. the moral dilemma -the mental constraints that government providers feel when they are working a second job	P22: 18 You could enroll and do particularly consultant work. You could enroll and maximum part time, or half of the day, until, you are free to do your golf (laughs), play your golf or cricket, or whatever else, without any ill feeling afterwards. Feeling that I have fulfilled my obligation to the government and to the nation

Category	Definition	Examples
Feedback	A process that leads to unintended consequences and reinforcing or balancing behaviors.	P5:17 "R: These are private clinics who tend to put up these facilities. Some of them are started by professionals in the same industry, others just business people - they open up because they know there are many patients, they have their clientele. And they are able to buy and equip their units. And then, they find that they do not really have the expertise. And also, having [X hospital] staff working in their unit part time, gives them publicity. Oh, so I can meet this same guy in this unit! Of course, he'll offer you the same kind of level of service as he would offer you within the hospital. And maybe you'll find it more convenient to meet with this person out there because it is less congested, you can have better privacy. You know, sometimes it's difficult to ensure that within the hospital because of the crowding. Yes."
Contextual factors		
Labor market	Includes broader issues such as health worker wages, how they are set, and how they compare with the East African Community or with other civil servants.	P31:119 "R: Yes, certainly, yes. Certainly, certainly. 80% or more of our doctors go out; with those who come out of our universities I: 80% or more! R: I think they run out. Go to Rwanda and all those other countries, yah. I'd even recommend each of our doctors to build a health centre in his village in the rural areas. To have a small health centre/ hospital, yah, where he can go when he's off, and help those people in the rural areas, yah. Perhaps he'll be the only person they meet, in 6 months, in two years, whatever. But that would be something, coz they have nobody to look after them. You can move 100km; you'll not find a health centre, hmmm "

Category	Definition	Examples
Projects	Initially part of the "labor market" code, now an in vivo code to capture internal labor markets - i.e. the labor markets generated informally through the existence of projects.	Example - see P24 53-55 ". And we were told that these midwives actually have got uh, engagements within the hospital. There are five projects, run by USAID, run by University which is dealing with children, so University from the US which is dealing with HIV infected children, and um ... [...] Yes, MJHAP, all those projects there. Now, all those midwives are actually on those projects! And they are paid well and they are required on those projects. "
Community demand	Explains how respondents' perceive community demand for their services	P8:54 " R: I think it would be more in specialists, aah, because aah specialists are very few, and there's a lot of demand for them. Because you, have to provide services in the general hospitals of government, at the same time the private, because of demand of the health services"
Health supply	Issues related to how the supply of health workers influences dual practice and how it occurs (e.g. specialist doctors are very scarce, therefore, they engage in dual practice usually only at larger hospitals, and have a lot of power over their public facility because they are not easily replaced).	P26:47 "R: I don't know. I think that's what I have to say ... is the emergence of these projects and the hospitals. There are soo many hospitals. I understand there are ... I don't know, yesterday we were in another meeting, and they mentioned, and the number was quite high. And it comes up every day. So, the presence ... somebody puts up a hospital, thinking about [a particular hospital] as a source of human resource and that is not such a good idea. Because, I myself am involved in ... in ... putting up a hospital in an environment. And it was actually our policy that we're not going to get people who are working in [a hospital]. Even if they were just moonlighting because people were working here during the day, and they could work there overnight, but we said "no" as a principle, let's get people who are not working in [this hospital]. People who are retired, or people who are not employed in [...here]. And it's working out well with us. I don't know why the other people don't do it. "

Category	Definition	Examples
Private sector	Describes private sector structure and characteristics that are relevant to dual practice and opportunities to take on multiple jobs; Also includes When respondents who work across both sectors describe some private sector characteristics which hint at why they think the management is better in the private sector (special "management ingredients" that differentiate the private sector from the public one) and that might get to why dual practice is perceived to be better managed in the private sector	P16: R: That's what i see; it's a sense of ownership. Because if you feel really you own, because for them this is a private business; this is my thing .it's a sense of ownership and feel that this is mine, must do the right thing. And it must put in place things where it is, can make. Because the one I'm in, it's profit making. So it's between, must put everything straight so that you get the profits. Yah, people would love to work there because if you don't get the people to work there, you still have where to be. You still have somewhere to be, so you must make everything straight for us to be there, so they must pay well, they must have the equipment. Ok they must see that everything is in place. But i think it's a sense of ownership and nothing I: Hhmmm and you don't feel the same sense of ownership here. Can you tell me more about that? R: You know, everyone does, i mean we just think its government. Let government take care of it, because i, its government as a policy issues. because you really, you really, you come and say yah, this is my department, they say; this is not available and you go and ask, you say; but i made a requisition earlier on, no one is responding and it's like every one forwards this; that i told so and so, you know, it's forwarded to So you're all left in space and you wonder, What's happening? Also, i just feel that you know, no one is even taking a step and saying that; you know this is mine. And even those of done, nothing comes out. I mean, just say them l, you think; aah, I'm frustrated So, that's what i, i think

Category	Definition	Examples
Economic climate	Describes how changes in the broader economic climate might be relevant to how people seek income to meet their livelihoods	P14:92,93 "I. you have said when things became tough economically what do you mean? R.things have changed because I think those years which even a doctor qualified oba they would give a vehicle a house, what but now the cost of living also this is what I wanted to mean. the cost of living somebody gives you 100,000/=now by 5:00.you don't have anything its already finished, you to the market to buy food 100.000/=can not buy food for like four people for a week so you find out that if 100.000/=can not give us food for seven days, now what is 500.000/=and this 500.000/=excluding transport, meals, house rent you have to pay so you find that you are just working for the government, you are not doing anything for yourself, you have a child you can't take to a school not even a good school. you have two kids, you are working for only 500.000/=you have to get food to feed them, some school fees each wants like 500.000/=so you keep getting loan, loans, loans, the loans keeps accumulating, government is not looking at that."
Public sector work environment	Captures a respondents' description of their work environment in the public sector (i.e. infrastructure, equipment and supplies, health workforce, other working conditions). Might not be something I would need to describe in detail in the analysis, but gives me the option to pull it up if necessary.	P16: is not very conducive in that one like equipment, we have few equipment, and those which are not there there're not really one you'd love to use, and then we have so many patients, very, very many patients. The skill is ok; the people at least they are skilled enough. Aaah, but, (...), but really about the equipment, it's not enough and really very in, and, the, sometimes, because of the many, many patients, the wards are, there're quite small. There're those scenarios where you feel there're quite small. And then consumable is really, really, there's minimal

Category	Definition	Examples
Other contextual factors	Describes mentions of general items that might not meet above criteria (e.g. health workforce mobility or how easy it is to move around for additional jobs; cultural and ethnic ties or any preferences to associate with certain social/ethic groups)	P6: 123 "R: The issue of health insurance. I: The issue of health insurance? What about it? R: With health insurance at least it would help us standardize many aspects - the service, the charges, cuz at the moment it's like a free market"

APPENDIX 3: HEALTH PROVIDER SELF-ADMINISTERED QUESTIONNAIRE

HEALTH PROVIDER QUESTIONNAIRE

Respondent ID	

Date:
Research Assistant Name:

PART 1: PROVIDER PERCEPTIONS OF DUAL PRACTICE

Many Ugandan health workers who are employed full-time at a government facility also work part-time in the private health sector (both private for-profit and private not-for-profit). This is called dual practice. Based on a qualitative study conducted in Kampala in July-August 2012, dual practice can have both positive and negative effects on service delivery.

The following questions will present you with different combinations of potential effects of dual practice on service delivery, presented to you five at a time.

The instructions for the next 11 questions are the same: for each question, choose ONE effect out of these five that you think is MOST IMPORTANT for service delivery, and choose ONE effect out of these five that you think is LEAST IMPORTANT for service delivery.

Tick only ONE effect in the "MOST IMPORTANT" column and only ONE effect in the "LEAST IMPORTANT" column for each question.

You will notice that the effects will each repeat several times throughout these questions. Please make your decision based on only the set of five effects presented to you in a given question and do not look back to the choices that you have already made. There is no right or wrong answer.

HEALTH PROVIDER QUESTIONNAIRE

Respondent ID	

For each question, choose ONE effect out of these five that you think is MOST IMPORTANT for service delivery, and choose ONE effect out of these five that you think is LEAST IMPORTANT for service delivery.

Tick only ONE effect in the "MOST IMPORTANT" column and only ONE effect in the "LEAST IMPORTANT" column for each question.

Q 1.1		**Most important**	**Least important**
A	Long waiting times by clients at public sector facilities.		
B	Poor health worker performance in public sector.		
C	Additional income for public sector health workers.		
D	Skills transfer between public and private sectors.		
E	Fulfillment of unmet population demand for services.		

Q1.2		**Most important**	**Least important**
A	High rates of absenteeism in public sector facilities.		
B	Fulfillment of unmet population demand for services.		
C	Poor health worker performance in public sector.		
D	Health workers stressed due to balancing two jobs.		
E	Provision of patient care after public sector hours.		

HEALTH PROVIDER QUESTIONNAIRE

Respondent ID	

For each question, choose ONE effect out of these five that you think is MOST IMPORTANT for service delivery, and choose ONE effect out of these five that you think is LEAST IMPORTANT for service delivery.

Tick only ONE effect in the "MOST IMPORTANT" column and only ONE effect in the "LEAST IMPORTANT" column for each question.

Q1.3		**Most important**	**Least important**
A	Health workers stressed due to balancing two jobs.		
B	High rates of absenteeism in public sector facilities.		
C	Long waiting times by clients at public sector facilities.		
D	Additional income for public sector health workers.		
E	Reduce the risk of health workers going abroad.		

Q1.4		**Most important**	**Least important**
A	Neglect of duties while at public sector job.		
B	Reduce the risk of health workers going abroad.		
C	High rates of absenteeism in public sector facilities.		
D	Poor health worker performance in public sector.		
E	Skills transfer between public and private sectors.		

HEALTH PROVIDER QUESTIONNAIRE

Respondent ID	

For each question, choose ONE effect out of these five that you think is MOST IMPORTANT for service delivery, and choose ONE effect out of these five that you think is LEAST IMPORTANT for service delivery.

Tick only ONE effect in the "MOST IMPORTANT" column and only ONE effect in the "LEAST IMPORTANT" column for each question.

Q1.5		**Most important**	**Least important**
A	Additional income for public sector health workers.		
B	Health workers stressed due to balancing two jobs.		
C	Skills transfer between public and private sectors.		
D	Provision of patient care after public sector hours.		
E	Neglect of duties while at public sector job.		

Q1.6		**Most important**	**Least important**
A	Exposure to learning opportunities in private sector.		
B	Skills transfer between public and private sectors.		
C	Reduce the risk of health workers going abroad.		
D	Fulfillment of unmet population demand for services.		
E	Health workers stressed due to balancing two jobs.		

Respondent ID	

For each question, choose ONE effect out of these five that you think is MOST IMPORTANT for service delivery, and choose ONE effect out of these five that you think is LEAST IMPORTANT for service delivery.

Tick only ONE effect in the "MOST IMPORTANT" column and only ONE effect in the "LEAST IMPORTANT" column for each question.

Q1.7		**Most important**	**Least important**
A	Skills transfer between public and private sectors.		
B	Long waiting times by clients at public sector facilities.		
C	Provision of patient care after public sector hours.		
D	Exposure to learning opportunities in private sector.		
E	High rates of absenteeism in public sector facilities.		

Q1.8		**Most important**	**Least important**
A	Reduce the risk of health workers going abroad.		
B	Provision of patient care after public sector hours.		
C	Fulfillment of unmet population demand for services.		
D	Neglect of duties while at public sector job.		
E	Long waiting times by clients at public sector facilities.		

Respondent ID	

For each question, choose ONE effect out of these five that you think is MOST IMPORTANT for service delivery, and choose ONE effect out of these five that you think is LEAST IMPORTANT for service delivery.

Tick only ONE effect in the "MOST IMPORTANT" column and only ONE effect in the "LEAST IMPORTANT" column for each question.

Q1.9		**Most important**	**Least important**
A	Provision of patient care after public sector hours.		
B	Additional income for public sector health workers.		
C	Exposure to learning opportunities in private sector.		
D	Reduce the risk of health workers going abroad.		
E	Poor health worker performance in public sector.		

Q1.10		**Most important**	**Least important**
A	Poor health worker performance in public sector.		
B	Neglect of duties while at public sector job.		
C	Health workers stressed due to balancing two jobs.		
D	Long waiting times by clients at public sector facilities.		
E	Exposure to learning opportunities in private sector.		

Respondent ID	

For each question, choose ONE effect out of these five that you think is MOST IMPORTANT for service delivery, and choose ONE effect out of these five that you think is LEAST IMPORTANT for service delivery.

Tick only ONE effect in the "MOST IMPORTANT" column and only ONE effect in the "LEAST IMPORTANT" column for each question.

Q1.11		**Most important**	**Least important**
A	Fulfillment of unmet population demand for services.		
B	Exposure to learning opportunities in private sector.		
C	Neglect of duties while at public sector job.		
D	High rates of absenteeism in public sector facilities.		
E	Additional income for public sector health workers.		

HEALTH PROVIDER QUESTIONNAIRE

Respondent ID	

PART 2: PROVIDER PREFERENCES FOR DUAL PRACTICE POLICY ELEMENTS

Many Ugandan health workers who are employed full-time at a government facility also work part-time in the private health sector (both private for-profit and private not-for-profit). This is called dual practice. Based on a qualitative study conducted in Kampala in July-August 2012, four potential policy elements for a policy on dual practice were obtained. These were government salary, participation in dual practice, benefits, and work environment structure.

The following questions will present you with different policy options for each of these four elements.

For each of the following 9 questions, the instructions are the same: choose ONE policy option out of each set that you think is MOST IMPORTANT for policy-makers to include in a potential policy on dual practice in order to make things better for everyone.

And choose ONE policy option out of each set that you think is LEAST IMPORTANT for policy-makers to include in a potential policy on dual practice, in order to make things better for everyone.

Tick only ONE effect in the "MOST IMPORTANT" column and only ONE effect in the "LEAST IMPORTANT" column for each question.

You will notice that the policy options will each repeat several times throughout these questions. Please make your decision based on only the set policy options presented to you in a given question and do not look back to the choices that you have already made. There is no right or wrong answer.

HEALTH PROVIDER QUESTIONNAIRE

Respondent ID	

For each of these questions, choose ONE policy option out of each set that you think is MOST IMPORTANT for policy-makers to include in a potential policy on dual practice in order to make things better for everyone.

And choose ONE policy option out of each set that you think is LEAST IMPORTANT for policy-makers to include in a potential policy on dual practice, in order to make things better for everyone.

Tick only ONE effect in the "MOST IMPORTANT" column and only ONE effect in the "LEAST IMPORTANT" column for each question.

Q2.1	**Policy options**	**Most important**	**Least important**
Salary	100% increase in government salary		
Dual practice	Allowed, not required to declare private practice schedule		
Benefits	Sponsorship for training for new skills every 3-5 years		
Work structure	Stricter job monitoring by using clock-in mechanism		

Q2.2	**Policy options**	**Most important**	**Least important**
Salary	100% increase in government salary		
Dual practice	Allowed, if private practice schedule declared formally to supervisor		
Benefits	Overtime pay for work beyond 40 hours per week		
Work structure	Regular supportive supervision		

HEALTH PROVIDER QUESTIONNAIRE

Respondent ID	

For each of these questions, choose ONE policy option out of each set that you think is MOST IMPORTANT for policy-makers to include in a potential policy on dual practice in order to make things better for everyone.

And choose ONE policy option out of each set that you think is LEAST IMPORTANT for policy-makers to include in a potential policy on dual practice, in order to make things better for everyone.

Tick only ONE effect in the "MOST IMPORTANT" column and only ONE effect in the "LEAST IMPORTANT" column for each question.

Q2.3	**Policy options**	**Most important**	**Least important**
Salary	50% increase in government salary		
Dual practice	Allowed, if private practice schedule declared formally to supervisor		
Benefits	Government-sponsored accommodation		
Work structure	Stricter job monitoring by using clock-in mechanism		

Q2. 4	**Policy options**	**Most important**	**Least important**
Salary	30% increase in government salary		
Dual practice	Allowed, if private practice schedule declared formally to supervisor		
Benefits	Sponsorship for training for new skills every 3-5 years		
Work structure	Part-time government contract		

Respondent ID	

For each of these questions, choose ONE policy option out of each set that you think is MOST IMPORTANT for policy-makers to include in a potential policy on dual practice in order to make things better for everyone.

And choose ONE policy option out of each set that you think is LEAST IMPORTANT for policy-makers to include in a potential policy on dual practice, in order to make things better for everyone.

Tick only ONE effect in the "MOST IMPORTANT" column and only ONE effect in the "LEAST IMPORTANT" column for each question.

Q2.5	**Policy options**	**Most important**	**Least important**
Salary	50% increase in government salary		
Dual practice	Providers allowed to see private patients within government facilities		
Benefits	Sponsorship for training for new skills every 3-5 years		
Work structure	Regular supportive supervision		

Q2.6	**Policy options**	**Most important**	**Least important**
Salary	30% increase in government salary		
Dual practice	Providers allowed to see private patients within government facilities		
Benefits	Overtime pay for work beyond 40 hours per week		
Work structure	Stricter job monitoring by using clock-in mechanism		

HEALTH PROVIDER QUESTIONNAIRE

Respondent ID	

For each of these questions, choose ONE policy option out of each set that you think is MOST IMPORTANT for policy-makers to include in a potential policy on dual practice in order to make things better for everyone.

And choose ONE policy option out of each set that you think is LEAST IMPORTANT for policy-makers to include in a potential policy on dual practice, in order to make things better for everyone.

Tick only ONE effect in the "MOST IMPORTANT" column and only ONE effect in the "LEAST IMPORTANT" column for each question.

Q2.7	**Policy options**	**Most important**	**Least important**
Salary	30% increase in government salary		
Dual practice	Allowed, not required to declare private practice schedule		
Benefits	Government-sponsored accommodation		
Work structure	Regular supportive supervision		

Q2.8	**Policy options**	**Most important**	**Least important**
Salary	100% increase in government salary		
Dual practice	Providers allowed to see private patients within government facilities		
Benefits	Government-sponsored accommodation		
Work structure	Part-time government contract		

Respondent ID	

For each of these questions, choose ONE policy option out of each set that you think is MOST IMPORTANT for policy-makers to include in a potential policy on dual practice in order to make things better for everyone.

And choose ONE policy option out of each set that you think is LEAST IMPORTANT for policy-makers to include in a potential policy on dual practice, in order to make things better for everyone.

Tick only ONE effect in the "MOST IMPORTANT" column and only ONE effect in the "LEAST IMPORTANT" column for each question.

Q2.9	**Policy options**	**Most important**	**Least important**
Salary	50% increase in government salary		
Dual practice	Allowed, not required to declare private practice schedule		
Benefits	Overtime pay for work beyond 40 hours per week		
Work structure	Part-time government contract		

PART 3: DEMOGRAPHIC AND EMPLOYMENT CHARACTERISTICS

Please read each question carefully and circle or check your response.

Nr.	Question	Responses		Skip
3.1	Are you male or female? (sex)	Male	1	
		Female	2	
3.2	What is your age (years)	|___|___| years		
3.3	Facility name:			
3.4	Facility type:	HCIII	1	
		HCIV	2	
		Hospital	3	
3.5	Which department or ward do you primarily work in within this facility?			
3.6	What is your official position within this facility?			
3.7	What managerial responsibility do you have within this facility?	None	1	
		Facility in-charge	2	
		Superintendent	3	
		Department head	4	
		Other - Specify:	5	
3.8	What is your profession by training?	Doctor MBChB	1	
		Doctor MBChB and MMed Specify MMed:	2	
		Nurse:	3	
		Other - Specify:	4	
3.9	What is the highest professional qualification you have achieved	Trained on the job	1	
		Certificate	2	
		Diploma	3	
		Degree	4	
		Post-graduate degree	5	
3.10 1	How many year(s) and month(s) have you worked at this facility?	|___|___|Years |___|___|Months		
3.11	Are you employed full-time or part-time at this facility?	Full-time	1	
		Part-time	2	
3.12	How many hours per week did you actually work at this facility last week?	|___|___| hours per week		
3.13	How many hours per day, on average, did you spend working at this facility last week?	|___|___| hours per day		

Nr.	Question	Responses			Skip
3.14	Do you know if you have a job description?	Yes		1	
		No		2	
3.15	When was the last time that someone from the Kampala City Council Authority or the Ministry of Health visited your work area for supervision purposes?	Within the past 30 days		1	
		Within the past 31-90 days		2	
		Within the past 3-6 months		3	
		More than 6 months		4	
		Never		5	
3.16	When was the most recent time that a supervisor or administrator from your facility talked with you about your work?	Within the past 30 days		1	
		Within the past 31-90 days		2	
		Within the past 3-6 months		3	
		More than 6 months		4	
		Never		5	
3.17	Is the payment of your salary up to date?	Yes		1	If "1" →3.19
		No		2	
3.18	If it is not up to date, how many months behind is it?	|___|___| months			
3.19	Has your salary increased in the past 12 months?	Yes		1	If "2" →3.21
		No		2	
3.20	What determined the size of your salary change	Routine increment		1	
		Individual performance		2	
		Promotion		3	
		Other - Specify:		4	
		Don't know		5	
3.21	Do you currently receive any of the following benefits and allowances? CHECK ALL THAT APPLY		**Y**	**N**	
		a. Free housing			
		b. Health care benefits and medicines			
		c. Food/meals at work			
		d. Transportation allowance			
		e. Performance-based payments			
		f. Overtime payments			
		g. Other - Specify:			
		h. No benefits			
3.22	In addition to your current job, do you work anywhere else?	Yes		1	If "2" →3.28
		No		2	
3.23	What type of job is it?	Agriculture		1	
		Government health services		2	
		Private health services		3	
		Trade		4	
		Other - Specify:		5	
3.24	If you have a second job, how much do you earn in this second job each month?	Less than 500,000 USHS		1	
		500,000-1,000,000 USHS		2	
		1,000,000 – 5,000,000 USHS		3	
		5,000,000 – 10,000,000 USHS		4	

Nr.	Question	Responses		Skip
		More than 10,000,000 USHS	5	
3.25	How many hours per week did you spend on this second job last week?	|___|___| hours per week		
3.26	How many hours per day did you spend on this second job last week?	|___|___| hours per day		
Nr.	**Question**	**Responses**		**Skip**
3.27	What is the main reason for taking this second job?	My primary job does not pay me enough	1	
		Can gain valuable experience	2	
		Better facility infrastructure	3	
		Better supply of medicine and equipment	4	
		Flexible working schedule	5	
		Interesting work	6	
		Seeing patients I could not see in my primary job	7	
		Other- Specify:	8	
3.28	Last time you missed your shift at work for reasons not directly related to your job, what was the main reason?	Own illness	1	
		Attending to family needs	2	
		Social responsibilities (e.g. wedding)	3	
		Other job	4	
		Other- Specify:	5	
3.29	Did you have to get permission from your supervisor?	Yes	1	If "1" →3.31
		No	2	
3.30	If you did not get permission, did any of the following occur? CHECK ALL THAT APPLY		**Y**	**N**
		a. My supervisor phoned me		
		b. I received a salary deduction		
		c. Marked on the attendance sheet		
		d. I received a warning from supervisor		
		e. I had to work extra		
		f. Other - Specify:		
3.31	In addition to these two jobs, do you work anywhere else?	Yes	1	If "2" →**END**
		No	2	
3.32	What type of job is your third job?	Agriculture	1	
		Government health services	2	
		Private health services	3	
		Trade	4	
		Other - Specify:	5	
3.33	If you have a third job, how much do you earn in this third job each month?	Less than 500,000 USHS	1	
		500,000-1,000,000 USHS	2	
		1,000,000 – 5,000,000 USHS	3	
		5,000,000 – 10,000,000 USHS	4	
		More than 10,000,000 USHS	5	

Nr.	Question	Responses	Skip
3.34	How many hours per week did you spend on this third job last week?	|___|___| hours per week	
3.35	How many hours per day did you spend on this third job last week?	|___|___| hours per day	

---------- Survey END ----------

CURRICULUM VITAE

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EDUCATION

PhD – 2014	Johns Hopkins Bloomberg School of Public Health International Health Department, Health Systems
CPH – 2012	Certified in Public Health
MHS – 2008	Johns Hopkins Bloomberg School of Public Health International Health Department, Health Systems
BA – 2005	Albion College, with Honors International Studies, Cell and Molecular Biology

DISSERTATION

Title:	Dual practice management and policy in a complex adaptive system: a mixed methods study in Kampala, Uganda

HONORS AND AWARDS

2011	Johns Hopkins Lipitz Policy Fund Public Health Policy Pilot Award
2010	Johns Hopkins School of Public Health - Health Systems Award
2010	Albion College Top 10 in 2010 Young Alumni Award
2009	USAID Global Health Bureau Exemplary Achievement
2007 – 2008	Albert Schweitzer Baltimore Fellow
2006 – 2008	Johns Hopkins School of Public Health Departmental Scholarship
2006	John Snow Inc. Award in International Health
2002 & 2003	President Bernard T. Lomas Project 250 Leadership Award
2004	Albion College Foundation for Undergraduate Research, Scholarship and Creative Activity Summer Research Grant
2001 – 2005	Albion College Presidential Scholarship Recipient
2001 – 2005	Albion College Prentiss M. Brown Honors Institute Member

PROFESSIONAL AND RESEARCH EXPERIENCE

Graduate Research Assistant, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD
(Nov 2009-present)

• *Systems Dynamics Modeling*: Contributing to the development of a system dynamics model - including design, modeling, sensitivity analysis, and journal article preparation using Vensim and Stata software. Project lead: Dr. David Bishai (Jan 2012 – present)

• *District-splitting in Uganda – a mixed methods exploration of a complex adaptive system*: Designed qualitative research component, including semi-structured interviews with district health leaders and health providers in eight districts. Principal investigators: Dr. David Bishai, Mr. Aloysius Mutebi (Oct 2011 – present)

• *Long-term impact of Fogarty International Center's health research training programs*: Contributed to study and tool design, data collection, data analysis, and the preparation of case

study reports and articles in Uganda and Kenya. Principal investigator: Dr. Sara Bennett (Nov 2009 – Sep 2013)

• *Systematic review on enhancing capacity for health systems research:* Contributed to the design and implementation, and preparation of a background paper for the First Global Health System Research Symposium in Montreux, Switzerland. Project lead: Dr. Sara Bennett (Nov 2010)

• *Johns Hopkins University – Makerere University Twinning Project*: Synthesized and reported the findings of a comprehensive needs assessment describing how the Makerere University's College of Health Sciences can better align its strategic contributions with Uganda's national health priorities; supported local collaborators to finalize data analyses and prepare articles for publication. Project lead: Dr. David Peters (Apr 2010 – Jan 2011)

Health Analyst, Broad Branch Associates, Washington, DC (Jan 2013 – Oct 2013)
• *Monitoring change in social norms to delay child marriage*: Co-led the design and field pilot of a monitoring system for UNICEF's conditional cash transfer and adolescent stipend programs in Bangladesh
• *Incentivizing quality of care*: Led a process to identify "incentivizable" quality of care indicators for maternal, neonatal, and child health through discussions with technical and country experts
• *Incentives for maternal and neonatal health*: Contributed to the development of a practical guide on comprehensive financing strategies for maternal and neonatal health

Consultant, Broad Branch Associates, Washington, DC (Feb 2011 – Dec 2012)
• *Verification in results-based financing schemes*: Synthesized lessons learned on verification in results-based financing schemes based on the experience of six country schemes
• *Results-based financing and equity*: Contributed to facilitating a working group on equity in results-based financing schemes in the Community of Practice on PBF in Africa; prepared a discussion paper on equity and results-based financing
• *Incentives in the supply chain activity*: Reviewed the literature and prepared a brief on approaches to incentivizing the public sector supply chain in low- and middle-income countries
• *Incentivizing quality of care*: Conducted a literature review on how quality of care is incentivized in high-income countries, in order to present practical recommendations for low and middle income countries seeking to use performance-based incentives to improve quality of care
• *Technical assistance for the design of a results-based financing pilot project in Senegal*: Supported Senegal's Technical Working Group by drafting project documents and tools (in French)

Health Systems Advisor, U.S. Agency for International Development, Washington, DC (Sep 2007 – Jan 2010)
• Guided and monitored contractor performance in the execution of the Health Systems 20/20 Project as technical advisor on the USAID management team
• Provided direct technical support to USAID Country Missions in Namibia, Nigeria, Peru, Rwanda, Senegal, and Uganda for program design and health system and USAID health portfolio assessment
• Co-led a working group on health systems indicators and benchmarking health system performance

Health Systems Division Analyst, U.S. Agency for International Development, Washington, DC (Jun 2007 – Aug 2007)

• Prepared a comprehensive review of current issues in organizational capacity development globally and at USAID, based on a literature review and key informant interviews

Research Assistant, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD (Sep 2006 – Sep 2007)
• Conducted an economic analysis of the migration of international medical graduates to the U.S.

Research Assistant, Foundation for Undergraduate Research, Scholarship and Creative Activity Research Program, Albion College, Albion, MI (May 2004 – Dec 2004)
• Designed and implemented original qualitative research on the Romanian health care system

Research and Policy Intern, Maltese Delegation to the European Parliament, Brussels, Belgium (Sep 2004 – Dec 2004)
• Conducted research on the European Union's social and environmental policies and monitored the Environment, Public Health, and Food Safety Committee and the Foreign Affairs Committee

PUBLICATIONS

Peer-reviewed journal articles

Bennett S, **Paina L**, Ssengooba F, Waswa D, M'imunya JM. The impact of Fogarty International Center research training programs on public health policy and program development in Kenya and Uganda. BMC Public Health. 2013 Aug 21;13:770.

Paina L, Ssengooba F, Waswa D, M'imunya JM, Bennett S. How does investment in research training affect the development of research networks and collaborations? Health Res Policy Syst. 2013 May 20;11:18.

Bennett S, **Paina, L,** et al. "The Significance of Mentorship in Health Research Training Programs in Africa: Fogarty International Center Experience in Kenya and Uganda" *Education for Health* (2013 Accepted for publication)

Peters DH, **Paina L**, Schleimann F. Sector-wide approaches (SWAps) in health: what have we learned? Health Policy Plan. 2013 Dec;28(8):884-90.

Peters DH, Paina L, Bennett S. Expecting the unexpected: applying the Develop-Distort Dilemma to maximize positive market impacts in health. Health Policy Plan. 2012 Oct;27 Suppl 4:iv44-53.

Paina L, Peters DH. Understanding pathways for scaling up health services through the lens of complex adaptive systems. Health Policy Plan. 2012 Aug;27(5):365-73.

Kiguli S, Baingana R, **Paina L**, Mafigiri D, Groves S, Katende G, Kiguli-Malwadde E, Kiguli J, Galukande M, Roy M, Bollinger R, Pariyo G. Situational analysis of teaching and learning of medicine and nursing students at Makerere University College of Health Sciences. BMC Int Health Hum Rights. 2011 Mar 9;11 Suppl 1:S3.

Paina L, Baker TD. Reverse foreign aid to Maryland revisited. Md Med. 2007 Summer;8(3):7-9.

Other publications

Ergo, A. and **Paina, L.** "Verification in performance-based incentive schemes" Bethesda, MD: Health Systems 20/20, Abt Associates Inc. (2012)

Ergo, A., **L. Paina**, et al. "Creating Stronger Incentives for High-Quality Health Care in Low- and Middle-Income Countries. Washington, D.C., Maternal and Child Health Integrated Program (MCHIP) (2012)

Bennett, S., **Paina, L.**, et al. "What must be done to enhance capacity for health systems research?" Background paper for the First Global Symposium on Health Systems Research, Nov 2010 Montreux, Switzerland

Paina, L. "The Evolution of the Romanian Health Care System 1989 – Present" Albion, MI: Prentiss M. Brown Honors Institute Thesis (2005)

SCIENTIFIC CONFERENCE PRESENTATIONS

• "Pathways to scaling up health services in complex adaptive systems" – Panel presentation, First Global Symposium on Health Systems Research, Nov 2010 Montreux, Switzerland

• "Dual practice in Uganda: Health workforce management in a complex adaptive system"– Poster presentation, Second Global Symposium on Health Systems Research, Oct 2012, Beijing, China

• "Dual practice and retention in Kampala, Uganda: preliminary findings from best-worst profile scaling" – Panel presentation, 9th World Congress on Health Economics, International Health Economics Association, Jul 2013 Sydney, Australia

TEACHING EXPERIENCE

2013	Short-course on Health Systems Research - Jimma University, Ethiopia Co-facilitator
2010-2011	Health systems in low and middle income countries: Teaching assistant, Johns Hopkins Bloomberg School of Public Health
2009-2011	Managing non-governmental organizations in the health sector: Teaching assistant, Johns Hopkins Bloomberg School of Public Health

OTHER INFORMATION

Reviewer:	Health Policy and Planning; PLOS Medicine; PLOS One; BMC; co-authored peer review for Social Science and Medicine with Dr. David Bishai
Software:	Microsoft Office, Stata, TreeAge, Atlas.ti, Vensim
Languages:	Romanian – maternal; English - fluent; French – highly proficient; German – basic